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The MIDNITE SOFTWARE GAZETTE

The PAPER

A BI-MONTHLY JOURNAL OF NOTES, REVIEWS AND ARTICLES

The First Independent U.S. Magazine for users of Commodore brand computers.

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WELCOME

In your hands is the only U.S. magazine attempting independent reviews of every product for Commodore computers. We are also known for timely Commodore news and hints. Re-subscribe today so we can continue this outrageously useful magazine. $23 US buys six bi-monthly issues.

Back issues? None before #12, except our Whole PET Catalogs ($8 postpaid)

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The only names we dared abbreviate this time were our own! People kept asking us who the reviewers were. Jim Oldfield is JO, Jim Strasma is JS and Ellen Strasma is ES. To see your full name in print, just drop us a line, or a line drawing, or an article, or...

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Commodore COMPUTER

THE MIDNITE XPRESS NOTES

Midnite Meanderings

by Jim Strasma

RENEWAL TIME IS NOW!:

For those of you who've been with us since our commercial beginning (issue 9 last Fall) this is the end of your current subscription. To get the next issue, re-subscribe now. You'll find a subscription blank tucked into this issue. Fill it out, return it with appropriate funds, and we're set for another year. Do that right now while you're thinking about it, because **we don't send out separate renewal notices.**

One reason to re-subscribe is that our Christmas issue this year will be so special that you won't want to miss it. We've been working this summer, along with user groups, on a book reviewing the top 200 programs for the VIC and 64. Those who re-subscribe will receive the book as part of their subscription.

Please note the survey on the renewal blank. We want to offer the best possible magazine for your needs. You can help by telling us which parts of the Midnite you like best, what you'd like added, and what you could do without.

On the price - we apologize for the increase, but don't see any way to avoid it and still publish all the reviews and notes. Our original prices were based on 48 pages. We've only printed that few pages once (with difficulty).

ON THE VIRTUES OF TIMELINESS:

Former The PAPER subscribers are used to mega-month delays in receiving issues. That doesn't apply to the old or new Midnite; if you, a friend, or a dealer doesn't get an issue well within the cover dates, you're likely not paid up. Call Debbie Oldfield at 217/864-5320 to be sure.

Ralph Bressler recently forwarded a pile of old letters to The PAPER. Seeing them reminded me once again of the importance of sending your letters to the right place, and including a stamped reply envelope if you want an answer other than through Midnite. Even if you leave a message on our answering machine to call you back collect, check again if we don't. A few folks weren't in even after several calls back.

I still have some letters from people who ask the impossible. Requests that take over a few minutes to do may sit for months. I handle mail daily, so if you don't get a prompt reply, either we're away or there's a problem.

Business Notes

by Jim Strasma

Generalized business packages are great for adapting to many different uses, but take a bit of pre-planning. Each month we get people asking, "How do I do this, or that?" on the more complex data bases, word processors or financial packages. This month Jim answers the latest questions on **SILICON OFFICE.** Please send us your own questions and solutions for the packages you use.-ES

SILICON OFFICE QUESTIONS:

1) When I want to **write postcards** with SILICON OFFICE, the minimum number of lines per page is 25, and I only need 19. What do you suggest?-Willi Geiselmann

REPLY: Add the optional "line range" extension to the PRINT TEXT command. For example, the command 'PT[POST.CARD]:L1-19' will print out the first 19 lines of a file named "post.card", leaving the printer ready for the next card.

The remaining questions are from Jim Cychler.

2) Are SILICON OFFICE **programs or templates available** through ATUG or others?

REPLY: No, but it's a good idea. When SO was first released here, dealers were given a sample diskette of ten useful templates, but NOT the programs to go with them. If you'd like to start an exchange, we'll pass the word.

3) Is there a **spelling program** for SILICON OFFICE?

REPLY: Try Spellmaster Systems, 6219-13th. St. Gulfport FL 33707.

4) Will SILICON OFFICE **support subroutines?**

REPLY: No. This is a major lack, along with MID$, and PRINT AT.

5) Is there a way out of a crash, when the error light on my 8250 goes on and the keyboard is locked out?

REPLY: No, not if the RETURN and STOP keys are dead. Be sure your power supply is reliable (see Mergy's article in Midnite#13), and use the correct diskettes on the 8250 (double-density double-sided diskettes, certified for 77+ tracks). The best Verbatim and Elephant diskettes give me no problems.

6) Sometimes a few records are corrupted with reverse letters and weird symbols; sometimes I call the same record later, and it is normal.

REPLY: Be sure your Commodore printer is always on when the disk is. It can cause that garbling, as can a second computer on the bus that is turned off. I put all accessories on a single outlet strip sharing the same switch.

7) After **editing a text file,** I got a FILE NOT FOUND? error when I tried to print it. Sometimes it lists on a Disk Status command, but can't be recalled.

REPLY: Be sure to finish texts with FINISH EDIT rather than ABANDON EDIT. Do not include control characters such as cursor controls in the file name. If you rename the file from outside SILICON OFFICE, pad the name out to the same length with spaces, and start each name with "t." to identify a text file.

8) How does S.O. **compare with software for the IBM PC** and other micros?

REPLY: It is better than any I've seen. The closest competitors are 1-2-3 for the IBM PC, and DBASE II for CP/M systems. Neither of these includes a full word processor; on the other hand, 1-2-3 includes a spreadsheet and DBASE II has a better set of commands. Nothing for Commodore computers can top SO.

9) Why is this software not more popular?

REPLY: It is very popular in Europe. In England it's the top-selling system, used by over half their top companies (says a current ad.) I can think of 3 reasons it's not known here: 1) None of the "in" (i.e., heavily advertised) business computers in the U.S. can run SILICON OFFICE, although a new Victor 9000 version just appeared in England. 2) It costs MUCH more than competitors (up to $2,000 for the required memory board and hard disk version, vs. $400 for the best competing programs). 3) Its fantastic copy protection keeps the people who influence purchases but rarely buy programs themselves from seeing it.

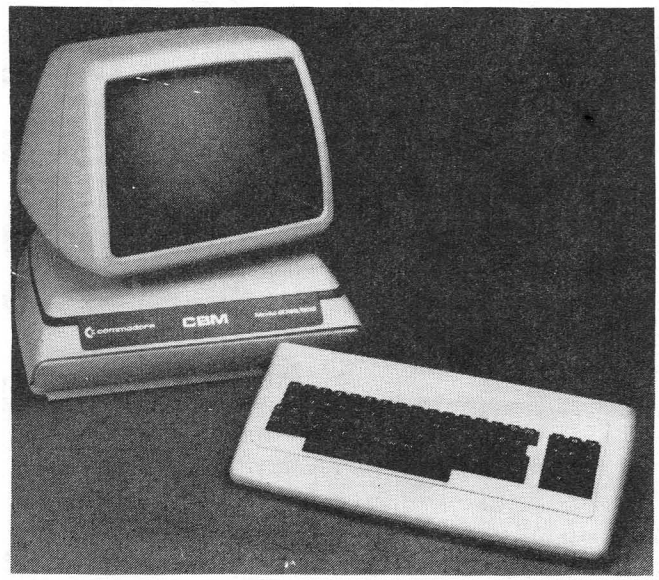
10) Is there an **address for Bristol Software?**

REPLY: U.S. distributers are: Computer Marketing (300 W. Marlton Pike, Cherry Hill NJ 08002) and A.I.D. (5901 John Martin Dr., Suite 140, Minneapolis MN 55430, 612/561-1645). Bristol Software is at Kingston's House, Grove Av., Queen Square, Bristol BS1 4QY U.K.

Commodore Notes

ANOTHER HOUSECLEANING:

Summer has been busy for Commodore. It started with a huge wholesale price cut on the 64 and all its software, as well as most CBM/PET hardware. The season continued with a stock split, loss of yet another corporate president (Bob Lane) shortly after the Consumer Electronics Show, the cancellation of the P, B and HHC machines, and refitting the 8032 into the B's case. Then came a new VIC circuit board design, amid industry rumors it is about to be cancelled, FCC approval and resurrection of the B, the first retirement ever from Commodore, and the firing or forced moving of most people in each regional office to Wayne PA, in another marketing restructure. Whew! (Regular contributor Keith Peterson is among those who chose not to move to PA.)



Courtesy of PET BENELUX Enchange

WHAT'S REALLY CANCELLED?:

On the VIC rumor, Commodore makes some strange decisions, but why on earth would it finally redo the entire board, just to cancel it a couple of months later? On the other hand, now that the 64 costs less than the VIC used to, and is well-supported with software, area dealers report VIC software sales are off. If true all over, that's a shame; many competitors like Atari have announced VIC versions of their best programs.

The B is either dead, or just about to hit the streets, depending on who you believe inside Commodore. With the latest bid to consolidate as many staffers as possible in the huge new Commodore building in PA, there may not be enough employees who know the B to get it out in salable form for another 2 years. With Keith Peterson's departure, we understand there are only about 3 people left in the corporation who really understand the operating system and hardware.

The **8032 is still in production,** and remains the cheapest 80 column computer around. In Europe it recently received a design award at this year's Hamburg computer fair. It is selling well there as a single board 8096 in the case intended for the BX. Expect to see the same case here "soon".

COMMODORE REPORTS RECORD THIRD QUARTER:

Bucking the trend that pulled down Texas Instruments and Atari, Commodore International Ltd. announced record sales, net income and earnings per share for the third quarter and the 9 months ended March 31. Spokesman Irving Gould predicted the strong sales would continue. Commodore also announced a change in advertising emphasis. Last year the ad campaigns stressed hardware; this year the company will be promoting software. The target audience (18-49-year-old males) remains the same.-Personal Computers Today

PRICE CUT RAMIFICATIONS:

For consumers, the latest price cuts are fantastic. But both dealers and software houses are worried. Discounters are selling VIC's and 64's within a few dollars of cost, forcing dealers to sell for far less than list. Also, a given margin is worth fewer dollars when prices drop. Dealers have to sell more boxes than before, but each customer needs as much support as ever. For software houses selling through Commodore, lower prices and royalties are balanced with higher volume. But those competing with Commodore software have a problem. Commodore's vertical integration from sand to slot allows them to undercut prevailing prices and still make a profit.

Commodore definitely appears out to eliminate several competitors. In all likelihood they will succeed, at the cost of a few friends as well. The low prices have also had one other unintended result - some people now actually believe it when Apple implies the][e is in a different league than the 64.

COMMODORE CUSTOMER SUPPORT GROUP:

The new address for Commodore Customer Support Group is 1200 Wilson Drive, Wayne PA 19087.

Competitors Notes

SUMMER COMPUTER CHIP SHORTAGES:

One problem looming this summer is a shortage of computer chips. Commodore makes most of its own (CBM reportedly owns 80% of all ROM production capacity in the U.S.), but others are scrambling this summer. The shortage may keep some new computers from making it to market, and cut sales of others.

BLOOD ON THE BALANCE SHEETS: ATARI, MATTEL and TEXAS INSTRUMENTS:

The big news this time is blood on the balance sheets. **Mattel** lost over $20 million in the first quarter; **Atari** lost $18 million, and expects to lose more in the second quarter; **TI** lost (before taxes) $200 million in the second quarter and took an even more horrible beating on the stock market as a result. According to Ron Jeffries, TI, Atari's parent company, Mattel and Milton Bradley are now on Standard & Poor's Credit Watch list. **Texas Instruments** has cancelled its new 99/2 computer, and the 99/8 upgrade model did not appear at the summer Consumer Electronics Show as expected. **Atari** used CES to announce a complete replacement of its entire computer line. However, the new models aren't due out till October. That ought to do wonders for sales of the current line this summer! According to Computer+Software News, Atari is laying off again - possibly another thousand workers. The article also reports TI cut 750 jobs, mostly temporaries it hired before, and Mattel cut 260.

AMERICAN BELL and AVCOR:

American Bell (Ma Bell to her friends) has just had its toes stepped on, hard. The same day Bell announced its long-rumored $900 Videotext computer terminal, a Toronto, Ontario firm called Avcor announced a $100 program that lets the 64 emulate it.-Infoworld

APPLE:

Hal Hardenberg thinks he knows why **LISA** is so slow. In order to include the very "in" feature of virtual memory (a way of making a disk drive look like a RAM chip), they have to constantly copy all the computer chip's internal variables into other memory, making the Lisa work much like TI's 99/4a - not exactly the computer Apple hoped to emulate.

As for **MACINTOSH**, Infoworld thinks it will have the same 68000 computer

chip, 128K of RAM memory, a 9" screen, 512x375 dot graphics, "Lisa-like" software, some of which will come from Microsoft, and a single one-Meg 3-1/2" micro-disk.

COLECO:

Coleco is still making waves with their now-$700 ADAM system. Lately we hear: 1) they only bought 25,000 of the printers that are part of the deal (reportedly a discontinued 6 cps version of the Smith Corona TP-1); 2) they couldn't (or decided not to) get "stringy floppies" , and will use a substitute from Phillips. 3) They claim to have sold out the planned 550,000 unit first year production. 4) Their stock went up $20 at CES, but down more since. (Can't wait to see CP/M on cassette!)

EPSON:

The heavily-advertised Epson QX-10 is very short on software. Popular Science reports it has a "Phantom Stomper" bug that occasionally erases files instead of copying them, and others report it is sloooow.....

IBM:

IBM's PEANUT is due out Sept. 1, and reportedly has 64K, hi-res graphics, a color monitor, an infrared remote keyboard, and a disk drive compatible with the PC, all for $600-700. Ron Jeffries also expects IBM to release POPCORN (a networking or multi-user PC) in August. Both may use the new Intel 186 processor, which is compatible with, faster than, and cheaper than the PC's 8088.

MICROSOFT/SPECTRAVIDEO:

Spectravideo, another start-up, is pushing a standard hardware design it developed with Microsoft. Their idea is that if all Japanese computer firms follow it, they will force the standard on the rest of us. Hardware standards are a good idea, but historically the industry just copies an established leader.

OSBORNE:

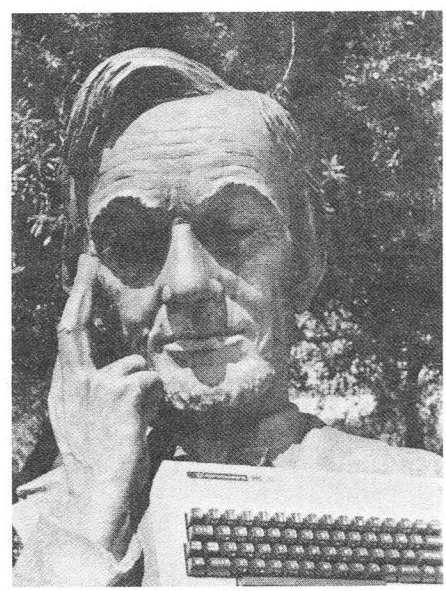
After 2 years of great success, Osborne Computers is in big financial trouble. People stopped buying the existing line in favor of the new model that was announced too far in advance. No, it has nothing to do with the B series!

SHARP:

Sharp showed an IBM-PC clone called the PC-5000, featuring an 8x80 LCD display and an 8088 processor, at the recent Micro show in Tokyo. It will reportedly have 192K ROM and 128-256K RAM, run MS-DOS and BASIC, weigh 11 pounds, cost $1,490 and have room for a built-in $340 thermal printer. Japanese sales are to begin in October.

TANDY:

Tandy's new Model 4 lacks only a decent monitor to be truly useful. But other companies are already offering $100 amber-phosphor monitors for it. I love using my **Model 100** lap computer. Of course, it's getting monotonous to pick up still another computer magazine, with the Model 100 on its cover, and read, "I'm writing these words at 40,000 feet on my Tandy Model 100 lap computer." Only a miracle will keep it from being a commercial success. If you haven't seen it yet, do! Ron Jeffries reports that Tandy is going to release an IBM compatible computer this month.



Commodore 64 Notes

by Ken Penny

The Adventures of Max Maxwell

DAY 6: Interface with a What?

Max Maxwell rolled over in bed again, prompting a mumble of irritation from his wife. For some reason he couldn't sleep. He kept hearing a strange laugh and bits of 300 baud data transfer, faintly, just at the edge of his hearing...

THE WORLD ON A WIRE...

Last month we discussed the RS-232 port for interfacing your computer to the 'real world'. Wonderful, if you want to talk to a printer or a plotter. But what about other computers? THAT'S the 'real world', you say. OK, here goes!

DOES IT TALK BELL 103?

If the real-world device you wish to connect your computer to understands the Bell 103 standard of modem communication, then all you need is a modem and a terminal program. There are several options in either case. Systems and devices that will talk Bell 103 include the obvious ones: COMPUSERVE, the SOURCE, BBS programs, and your friend's computer, as well as more obscure ones, such as a SILENTYPE 700, the local real estate listing service and EASYLINK (the interface to telex, mailgram, and other electronic mail services). Most systems support, as a minimum, the Bell 103 MODEM standard - or at least RS-232, which will accept a MODEM. At this level, you can truly interface to anything, since the standard includes ASCII character codes. If it's alpha-numeric, you can access it.

HARDWARE

The hardware that you choose depends on your needs. The cheapest and easiest is the VICMODEM, but you may want to use a SMARTMODEM or equivalent, or add an intelligent modem controller to do auto dialing and answering. The actual selection should be based on your needs. Do you need the MODEM to dial? Are you really that lazy, or are all your numbers 26 digits long? Would you have invested in a phone dialer anyway? Are you aggravated by repeated busy signals (a significant part of BBSing)? Do you promise not to call Steve Punter with it? (He hates auto-dial modems; they never apologize when they call by accident during the day.) If you pass that test, buy an auto-dial. You'll enjoy it. But follow a similar line of questioning before you get all the whistles and bells - you'll pay for them. Most of us don't need them; we just WANT them.

SOFTWARE

Some terminal software works with a disk drive, some with a printer, some with neither. Some will do file transfers, some will store the session on disk and print later. Be careful when selecting the software. No program seems to do it all. The important questions are: Will you want "dump to printer?" Will "dump to disk and print later" suffice? Will you want to download from BB systems? Will you want to transfer files between computers? The best program for all these things is MCTERM (EASYTERM on the 64). HES also has one with most of the capabilities, while public domain programs have many of the options. Shop around, ask your friends, and read the Midnite for the 'right' one for you.

DOES IT TALK BELL 212?

The next best thing for a computer to talk is the 212 1200 BAUD standard. Most 1200 bauds are of this style (actually a 600 baud data transfer rate), with

data compaction to get the effective data rate to 1200. Since most 212 compatible systems also have 300 baud automatically, it isn't essential. But once you've seen 1200 baud, it's hard to go back!

> Max popped out of bed and scurried into the computer room, still remembering that data transfer he had heard the night before. WHAT WAS THIS? The 64 was on, with JUMPMAN on the screen. The window to the garage was open, his Ford parked below it. And the top two scores on JUMPMAN, both triple his best, were by EXP and C64....

And From Our Readers:

NEW WAY TO LOAD AND RUN FROM CASSETTE:

When you hit the left SHIFT key, double quote and dollar sign at the same time (as when typing LOAD"$",8 quickly) the computer will try to do a load and run from cassette, just as when you hit a shifted RUN/STOP key.-Nolan Brown

NEW WAY TO BREAK OUT OF A PROGRAM:

It's not always necessary to press [RUN/STOP][RESTORE] to break out of a program. Try this: press the [COMMODORE] and [RUN/STOP] keys together and you will break without losing the screen...-Ron Wray (CCC of Toledo News Letter)

DANGERS OF POKING A BLANK SCREEN:

Don't poke the screen blank to make the computer process faster unless you're sure your algorithm is right and your syntax is perfect. To solve a problem my teacher gave me, I set up 8 nested loops. Well, that's what I thought I did. [Then] I blanked the screen to speed up the computer. Thinking the program might take a while to run, I stared at a blank TV for 3 hours, waiting for it to turn the screen back on. I finally gave up, pressed RUN/STOP and typed the POKE to restore the screen image, only to see a syntax error in line 2! I fixed the program, and it worked like a charm, in 110.8 seconds!-David Alexander

CURSOR BLEEDING ON THE 64:

The cursor on my 64 acts strangely on 3 TV sets and two different monitors. The first cursor seems OK, but the following one is about 1/3 narrower with a vertical stripe and bleeds color. If you type a continuous line of upper case "M's" with a space between, they should be OK. I first noticed this when typing a line of shifted "&'s" on a white background with any cursor color. Result - a different color in alternate positions. I tried all available 64's I could locate, and they all work the same.-Robert Baker (Louisville KY)

IMPROVING THE IMAGE ON THE 64 AND 1701 MONITOR:

Harold Ratner sent this reply to Gary Stone's question on "how to SAFELY tap the old 64's chroma signal to feed [the Commodore 1701] monitor?":

1) The monitor with the included two wire cable is far superior to a TV set and much better than Amdek.

2) In the 64 manual is a diagram for the 5 pin DIN socket, identifying luminance, chroma and audio outputs. Buy an audio cable 5 pin DIN to 4 RCA plugs (under $5 at the local electronics store). With your olimeter, identify which DIN pin supplies each center lead on the four RCA plugs. Absolutely disregard any color coding on the RCA plugs. Compare with the diagram and plug the appropriate RCA plugs into their rear receptacle. Turn the monitor switch to "rear," instead of "front." Cut away the fourth RCA plug and identify the rest.

3) On powerup, the "blue on blue" is sharp, clear and bright. You may even have to turn down the brightness and contrast controls! Only a few color letters (like yellow) are unreadable on same color backrounds. Try some of your graphic programs [like FROGGER] and see real resolution and stability. Just about everyone I know has made a cable and restored their faith in the 64.

Disk Notes

CAN DOS PROTECTION HARM YOUR DRIVE?

Most 64 software I have on diskette is copyable, but a few programs are DOS protected. I'm worried about programs that create and use their own DOS format. After I had been using a protected diskette of this type for a little while, my drive began to fail. I thought this odd, since I've had my drive since December, and had no problems until I started to use that DOS-protected program. John O'Hare told me his drive also failed soon after repeatedly using another DOS-format protected program. Could protection schemes damage disk drives?-Mark Niggeman

WHY NO SMOKING?

Can you imagine a B-52 bomber, with its wheels down flying 60 MPH one inch above and parallel to the runway? If so, shrink the B-52 down to the size of a hard disk drive. The one inch that was between the wheels and the runway is now shrunk down proportionally and becomes the gap between the disk and the read/write head(s). This gap, measured in "microns" - one millionth of a meter (.000001), is several microns. The floppy disk tolerances may not be quite as tight, but they are close enough for all drive manufacturers to recommend "NO SMOKING" around them.-(Western Illinois PUG Newsletter)

PROPER DENSITY DISKETTES: WHICH DO I BUY?

How about a discussion of the proper density diskette to select for the various Commodore drives?-Ed Crossman

REPLY: For all Commodore disk drives except the 8050 and 8250, use single-sided, single-density diskettes certified for 40 tracks. The 8050 uses "single-sided, double-density" diskettes certified for 77 tracks, and the 8250 uses "double-sided, double-density" diskettes certified for 77 tracks. (NOTE: The magnetic data is first recorded on the bottom side of the diskette, which I should never lay directly on my dusty desktop without its jacket).-ES

RECYCLED DISKETTE MAILERS:

Here's a way to make your own mailers for diskettes or tapes. Cut 8x12" rectangles out of a clean corrugated box. Fold the long 12 inch side in half and tape the edges with paper sealing tape (not masking tape). Here are four tips for a more professional look: 1) Use a Popsicle stick or tongue depresser between the cardboard as you tape for added depth. 2) Use the inside of the box for the outside of the mailer. 3) Use the rounded edge of the scissors to crease, not tear, the cardboard in the middle. 4) Fold a piece of clean typing paper around the diskette to keep it away from cardboard dust and tape glue. Cassettes are trickier. Use the same technique, but fold the cardboard around dowels or thin paperbacks for thickness, and use 2 inch wide tape.-Herb Gross

SHOULD I USE BOTH SIDES OF MY SINGLE-SIDED DISKETTE?

What's the latest on using both sides of the diskette, and what punch out kit do you recommend?-Ed Crossman

REPLY: We don't recommend using both sides of a single-sided diskette. It redeposits dirt on the diskette surface as it rotates in the opposite direction; and some diskettes fail on the second side. For those chintzy enough to do it anyway, a $.69 GEM paper punch does as well as a commercial punch. Just be sure to make as clean and level a cut as possible for the second write-protect notch.-ES

Dealer Notes

JINI MICRO SYSTEMS STRIKES OUT AGAIN (AND AGAIN, AND AGAIN):

Two people in two days have notified us they are instituting legal action against Jini Micro Systems of New York, the makers of JINSAM, JINSAM EXECUTIVE and MINI JINI. Their tales of woe are typical of dozens of other complaints I've heard about Jini Micro over the years. To encourage our readers to be sure no one else is stuck with Jini Micro programs, we are reprinting a portion of Dr. Reihold Aman's formal complaint about Jini Micro to the Federal Trade Commission.

In regard to his last point, that he will personally assure JINSAM is turned into a Public Domain program and unprotected, it may be in the Public Domain now. If they are, as my sources report, still peddling JINSAM with my SUBSORT in it, they are violating my copyright, and have lost their legal basis for objecting if others ignore theirs. Frankly, being forcibly unprotected and widely exchanged is the best thing that could happen to JINSAM. Then its innumerable bugs could finally be corrected.-JS

To Whom It May Concern:

I herewith request that your office take all legal steps possible against the above-named company (hereafter known as JMS) for its unfair, morally corrupt, if not illegal practices. My letters to the owners, James Iscaro and Nancy Iscaro, have gone unanswered. ...only legal actions will have any effect on them, teaching them how to conduct business in a responsible way.

In addition to you, we are also contacting the New York Better Busines Bureau, the State of Wisconsin Consumer Protection Division, Computer Software Dealers, and publishers of computer magazines.

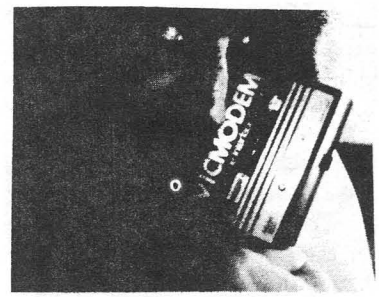
History of the Problem:

1) On June 21, 1982, I ordered... JINSAM 8.Ø... from one of their dealers... ...because of shoddy packaging by JMS, it was damaged in transit....
2) I called JMS and asked for a replacement disk. It ... again did not work, because they sent [one] whose number did not match their protective ROM number.
3) Again I called JMS. [An] employee promised to send another replacement...
4) After ... waiting another 3 weeks, I called Ms. Iscaro.... It was sent by mid-August, but [too late for] my daughter's summer work.... I hired a typist to transfer 24ØØ subscribers onto two disks... at a cost of $24Ø.
5) ....one cannot use upper and lower case characters, commas, colons, quotation marks, the word "end," and address labels are restricted to 4 lines.
6) Autumn '82 mailing campaigns and typesetting of a new book were ruined....
7) I once more wrote for help to JMS [and] received a note that I should send my disk holding these important addresses to them for study, which I did in mid-October 1982, with 3 pages of questions.
8) My letters to James Iscaro (Nov. 1982) and Nancy Iscaro (December 6, 1982) have not been answered as of today - 7 months later.
9) To get my publishing business back to normal, I had to retype all 24ØØ subscribers' addresses with the help of a new program.
1Ø) In total, I used their.... program and manual for 3 weeks during August 1982, but have not used it since. Thus, I request that my money be refunded.

JMS [has] annual sales of $2ØØ,ØØØ-499,ØØØ.... Only strong legal action against that outfit will have any effect, and I wish that you act incisively to get that outfit to return my money, and that you curtail their unprofessional activities, thus protecting other consumers against such "businessmen."

...we plan on more legal action and on turning their overpriced junk into free "publish domain" programs.-Dr. Reinhold Aman, President, Maledicta Press

Modem Notes



Read Ken Penny in Commodore 64 Notes this issue for lots of information on modem hardware and software for the 64, CBM, PET and VIC owners!-ES

THE STRASMAS AND MIDNITE FINALLY JOIN IN:

Anyone wanting to leave electronic mail, articles, or reviews for us may now do so via either COMPUSERVE (75775,62) or the SOURCE (sts Ø51). We check our account once or twice a week. You can also leave messages on the new LYNX-LINE bulletin board at Lincoln College (217/735-3331).

QUESTION: On making the 64 and VICMODEM work to access COMPUSERVE

I am turning to you for help only after failing to get correct information from Compuserve, from Commodore Customer Support, and from a cryptic article by Jeff Hand in Commodore magazine. Using the 64 and VICMODEM, I would like to read the questions and answers in the Commodore Information Network [on Compuserve]. I have made a number of calls and spent about 6 hours on-line, and gotten as far as "sig/Access", but have not been able to read a single public file. I cannot tell you how frustrated I am. Can you help me-step by step-or can you refer me to someone else who can assist me?-Sidney I. Roberts, College of Arts & Sciences, Youngstown State University, Youngstown OH 44555.

REPLY: It takes time to talk anyone through the proper use of your modem, no matter how clearly the information is given. Probably someone in COPUG can help you. Write or visit Phil Lynch at 1Ø7 S. Westmoor Av., Columbus OH 432Ø4, or Jerry Key at 151 Flint Ridge Dr., Gahanna OH 4323Ø . Or you might try phoning Duane Harris at Compuserve (614/457-86ØØ). He wrote the access software for Commodore computers.-JS

NEW OR CHANGED BBS NUMBERS:

C.U.G. of Puerto Rico	Julio Martinez, SYSOP	8Ø9/781-Ø35Ø	8PM-8AM EST
Gin Board,Dodge City KS	Gary Noyes, SYSOP	316/225-2628	CST
LYNX-LINE, Lincoln IL	Jim Strasma, SYSOP	217/735-3331	9:3ØPM-8AM CST
NORTEC, Toronto ONT	David Bradley, SYSOP	416/487-5833	24 hours EST
RF Commtrole Systems IN		317/357-8597	24 hours EST/CDT
Rockwell PCC, TX	Don Lambert, SYSOP	214/996-68Ø8	5PM-8AM CST

Printer Notes

COMMODORE 1526 PRINTER MANUAL ADDITIONS:

Bernhardt Sandler gave us the following instructions on how to set the printer for tractor feed or friction feed:

TRACTOR FEED: Move the small lever to the left of the platen forward. Adjust the tractors as required for the width of the paper. Note that the left hand tractor can only by moved a short distance to the right. When it stops, the paper is properly lined up at the starr of printer head travel.

FRICTION FEED: Move the small lever to the left of the platen backward. Move the tractors to the extreme right and left.

Also, be sure to read his review of the printer under Commodore 64 Hardware Reviews, which describe several "bugs" he found in his model.-ES

Publisher Notes

FIVE YEAR REUNION MARKS YEAR-END ISSUE OF MIDNITE:

Issue #14 marks the end of another year of Midnite for most of you old-timers. In this high-tech, incredibly fast-paced microcomputer industry, if you've owned your Commodore for more than three years you're considered an old-timer. So what do we do? Just sit around and count our wrinkles? Come Back! Midnite is a user's magazine. Send in your reviews, views, hints, tips and such - nothing fancy - just information you can USE with your Commodore computer. Look again at our logo. We ARE you.

In no particular order or sense, I would like to thank the following friends without whom Midnite would not have been possible:

Bob Wolter	Carolyn Wolter	Paul Burton	Dick Immers
Jerry Key	Ralph Bressler	Sheri Wolter	John Walker
John Jones	David Malmberg	Robert Baker	Joe Spatafora
Lois Moore	Joe Swope	Brent Anderson	Ross Black
Gene Beals	Carl Moser	Jim Butterfield	Bob Skyles
Ron Jeffries	Fred Owens	Ceasar Hernandez	Jim Kemp
John O'Hare			

And of course Jim, Ellen, Phyllis, and my best half - my wife Debbie. And I can't leave out the most important people involved with publishing a magazine, THE SUBSCRIBERS! Thank you people, one and all. See ya next issue.-JO

Reader Questions and Comments

Comments

DO BUYER'S GUIDES REALLY HELP YOU?:

I'm coming to doubt the usefulness of "buyer's guides" which appear regularly on the newstands, because the lead-time in magazine publishing is incompatible with the rapid advances in computer technology and computer marketing. Even the regular monthlies, like Compute!, Creative Computing, and Compute's Gazette, have a 2-3 month lead time. What's the solution, then? Elementary, my dear Watson. Seek out the local computer user's groups.

The one publishing source which seems to come closest to giving you timely information is The Midnite. The editor and publisher are both well-known in the world of Commodore writing, and the publisher is the manager of a Commodore retail store. I never feel that I'm reading a "house publication." They give lots of criticism, as well as a positive view.-Rich Westerman (The Hacker Rag)

REPLY TO JERRY KEY ON PET VERSUS 64:

I have had the PET since it first appeared. In Nov 1979 I replaced it with the 2001-32N and it is still my "PET"! I said I would never go to color due to my age (74), I only play chess and cribbage, and have no young children. Then for some unknown reason I talked myself into buying a 64. How long did I keep it? Ten days! MORAL: If anyone who owns a PET/CBM ever asks your advice on the 64, have them try it next to the "Green Screen" for a few days. I know that the 64 will do a lot of things the PET/CBM cannot do, but if you have no need for color, forget the 64. As for me, it's back to the ol' green screen - a screen I can read and a keyboard I can use without peeking.-Robert Baker (KY)

Quoteable Quotes:

"Did you know ... that microprocessors work on smoke and if it ever gets out, they stop working?"-Journal-20

"Every program has at least two purposes: the one for which it was written and another for which it wasn't."-The Hacker's Rag

"Had the automobile developed at a pace equivalent to that of computer during the last 20 years, today a Rolls Royce would cost less than $3, get 3 million miles to the gallon, deliver enough power to drive the Queen Elizabeth II, and 6 of them would fit on the head of a pin!"-Washington Star

"If a listener nods his head when you're explaining your program, wake him up." -The Hacker's Rag

"If you think a file is something you use to round off the sharp edges of your computer, then come to Andre Kinnee's class on BASIC files."-(CC of Toledo)

Questions

QUESTION: We have recently purchased an **Apple][-e.** We need to know about good available software.-Kary Kay Kirn, Box 7, Farmersville IL 62533.

ANSWER: No offense, but this is a Commodore magazine. As a new Apple owner, you can get a free 1-year subscription to Softalk, a similar magazine. Ask your dealer. Also, some programs we review are available on the Apple.-JS

QUESTION: I am seeking **programs for Bowling Leagues**, specifically for the 64.-Bill Main, 111 Windemere, New Whiteland IN 46184.

ANSWER: I forwarded your letter to Briley Software. They market a Bowling package in versions for all Commodore computers.-JS

QUESTION: Is there anything which would allow programs for other brands of computers to work efficiently in the 64? Assuming the answer is no, how much trouble would it be for someone knowledgeable to **modify such programs for the 64?** Are you interested in doing such work? If so, for what fee?-Bill Main

ANSWER: The long-rumored emulator programs are still a glimmer on the horizon. Programs in Microsoft BASIC (such as Applesoft or Radio Shack Level II) can be converted quickly, so long as they avoid graphics, and are not protected against listing to a MODEM. Yes, we do consulting work. For a bowling system, I'd probably charge the price of the Apple system I'd need to do the work. That's why program conversions are usually done by kids, not consultants.-JS

QUESTION: **Where can I get SIMON BASIC?**-David Alexander

REPLY: Try writing: The Commodore Information Centre, 675 Ajax Avenue, Slough, Berkshire, 5L1 4BG, England or call them at (0753) 79292.-JS

QUESTION: Is there a code to allow the VIC to RUN programs on tape from the 64? Can I RUN VIC tapes on the 64?-Fred Jones

ANSWER: Either can run the other's programs unless they use one of the following BASIC words: PEEK, POKE, WAIT, SYS or USR. Also, 64 programs that use more than 22 columns across the screen or more than 23 rows down the screen will not display properly on the VIC.-JS

QUESTION: How can I tell how much memory I have left?-Fred Jones

ANSWER: Enter ?FRE(0) and the number of bytes left will appear. If the answer is less than 0 on a 64, you have over 32K left.-JS

User Group Notes

Group By Specialty:

THE COMMODORE 64 USERS GROUP, 4200 Commerce Ct., Suite 100, Corporate West, **Lisle, IL** 60532. Claims to be a nationwide non-profit independent organization of Commodore 64 users founded in Chicago in November, 1982.

NATIONAL VIC ASSOCIATION, 9 Crabapple Lane, **Nanuet, NY** 10954. Membership includes a bi-monthly newsletter in which members can run classified ads. They are compiling a library and trying to persuade dealers to offer discounts.

Groups by Locality:

ARKANSAS:

CONWAY COMPUTER CLUB, Conway AR. has a mixture of computers, but Commodore users outnumber the others. The club meets on the third Thursday of each month, usually at the High School or Middle School. It prints a small newsletter [the Conway Computer Club Newsletter). For a free copy of the newsletter, you may contact Coy Ison, 605 Fifth Av., Conway AR 72032 (501/327-1529).-Nolan Brown

CALIFORNIA:

SFVCUG (San Fernando Valley) reports their disk library is up to 105 diskettes of Public Domain software, and they are negotiating with Jane Campbell of the San Diego group to get even more. (Rumour has it that Jane has the largest exchange library of all.) Ah well, I suppose people still say there's no software for Commodore.... You may contact President Tom Lynch at 213/709-4736

ILLINOIS:

WESTERN ILLINOIS PET USER'S GROUP, Brenner library, Quincy College. "The Western Illlinois PET User's Group will respect all known copyrights and will not knowingly violate the integrity (or the laws) of any copyrighted material by copying it for public use." Family Membership is $20. Contact secretary Joe Ortiz, at 1204 Cherry Lane, Quincy IL 62301. 1983-84 officers were elected "by acclamation, not accumulation."

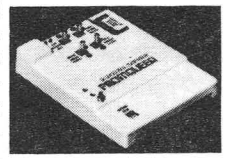
NEW YORK:

Henry Feinberg of 415 E. 85th. St. in New York NY 10028 is looking for a 64 user group in the City. Anyone knowing of one, please let him know.-ES

GLOUCESTER COMPUTER

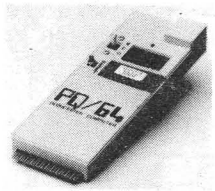
Products for home, industry & education

PROMQUEEN Write code for most common 8-bit microprocessors, test it in circuit, and burn it on EPROM with this all-in-one micro development system cartridge. Powerful machine code editor provides comprehensive ROMware development support. Ideal for robotics, process control, game development. Commodore VIC-20 host computer. Programs 2716, 2732, 2758 EPROMS and similar EPROMS. **$199.00**



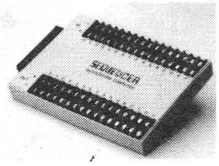
PROMQUEEN RS pack add RS-232 communications to Promqueen development system. **$69.00**

PQ/64 all features of Promqueen less mimic mode. Software enhanced to include EPROM QC utilities, RS-232 communication, printouts. 28 pin ZIF socket. Reads, edits runs and programs all 5 volt 2500 and 2700 series EPROMS plus variety of EEPROMS all without personality modules.. Commodore C-64 host computer. **$299.00**



PQ/64 RS pack performs RS-232 voltage conversions for PQ/64 system. **$49.00**

GLOUCESTER SEQUENCER Connect the VIC or 64 to the outside world for robotics, control, sensing. 16 independent inputs, 16 independent outputs plus unique software allowing user to define 255 "finite states." Includes 3 software timers, and stepper motor driver software. 100% machine coded software for high speed. All sequencer programs and state definitions are ROMable. VIC-20 or C-64 host. **$299.00**



ROM Packs Industrial quality circuit cards are socketed, solder masked, fully bypassed, and include a ground plane for low noise operation. Includes 1 EPROM. 8K & 16K models for VIC-20 and C-64. Specify 2732 or 2764 EPROM type. Molded plastic case. **$39.00**

All products shipped with comprehensive documentation. Call our user hotline **617-283-7719** or write for information: Gloucester Computer, 1 Blackburn Center, Gloucester, MA 01930.

CBM/PET REVIEWS

Book Reviews

COURSEWARE IN THE CLASSROOM: SELECTING, ORGANIZING, AND USING EDUCATIONAL SOFTWARE, by Ann Lathrop and Bobby Goodson; $10 from Addison-Wesley, 1983. Semi-annual? or annual? update for $7.50.

A "nitty-gritty" book for educators, containing practical helps for evaluation criteria, evaluation instruments, and organizing a software library. Excellent sample policy and procedure manual; a superficial description of K-12 software by program type; and a courseware directory, arranged alphabetically by program name (includes subject area, which machine, description, documentation quality, publisher, and publications recommending each program). Reviews have no evaluations; you can't rate programs on information provided.

The book's major problem, however, is universal: it is out of date. The only machines for which software is listed are PET, TRS 80, Apple, and Atari. Even examples are not state-of-the-art. The simulations, for example, feature MECC's "Odell Lake" and "Oregon Trail", both outstanding in 1980, but lacking the latest advances in graphics, color, or sound. I would rather recommend the reviews in the 51 magazines in Appendix C, or journals containing reviews with evaluations, such as the excellent School Microware Reviews ($20 from Dresden Associates, Box 246, Dresden, ME). I prefer a review that specifically rates a program in 5 to 8 areas, such as pedagogical soundness, user friendliness by age group, creative use of graphics, documentation and teacher aids, etc. In summary, I recommend the book to evaluate software and set up a system, but not for specific program information.-Dr. Elizabeth Kaspar

MACHINE LANGUAGE FOR BEGINNERS, by Richard Mansfield; $13 from Compute!

REVIEW #1: If you have a good understanding of BASIC and want to learn about machine Language, this book is a good starting point. Simple ML programs show the reader how the 6502 does its job. One small problem: I couldn't get the Simple Assembler to run on my 64. I would recommend using one of ATUG's M.L. Monitors available. Highly recommended for beginners (like me).-Tom Green

REVIEW #2: A usable, understandable, short course in ML, [presented] to beginners through analogy - using a large postal center as the ML coding and instruction headquarters and BITs and BYTEs as mail. Abounds in illustrations, standards and examples. Useful appendix containing graphic instruction sets and memory maps [plus] listings for each machine. Written in an easy to handle, durable, graphically pleasant, spiral bound format. Text is less than 150p. of 350 p.; the remainder is appendices. Covers several machines. Generally well written, but text sometimes glosses over topics.-L.A. Schwartzberg (Hardcopy)

PET FUN AND GAMES Update, $10 from Osborne/ McGraw-Hill.

A great book for those who missed out on Cursor. 31 programs, updated to work for both 40 and 80 column computers. Every program worked.-Nolan Brown

Z80 ASSEMBLY LANGUAGE SUBROUTINES, by Lance Leventhal; $18 from Osborne/McGraw-Hill.

If you work with the Z80, you'll like this. Contains many types of information, from ways to speed code to methods for shortening tables. The best part is the many useful subroutines: converting formats to any other format, array manipulation, math, string handlers and I/O, and some interrupt routines. Definitely interesting if you want to learn good programming.-Keith R. Peterson

Business Reviews

Accounting Programs:

MAGIS PLUS [TM] Update, $2000 from MAG; for 8032:

[Reviewed in Midnite#13] Clarification - Management Accountability Group, Inc. will correct any "bugs" found in its MAGIS Plus [TM]. The programs sent out to dealers can be backed up. If for some reason a program diskette will not properly load, we will replace the diskette at no charge during the first 90 days.-Peter H. Masterman, Vice President of National Software Sales

Data Base Managers:

THE ORACLE, $395 from Batteries Included. For 40 or 80 columns (PET,CBM or 64), disk and printer. Protective ROM at $9000.

A Data Manager of considerable power. Combines simplicity with speed. Does not provide all the options of SILICON OFFICE, THE ADMINISTRATOR or JINSAM, but avoids all that complexity and confusion. Though it doesn't allow records to be interrelated, you can have records of up to 99 fields displayed on up to 9 screens with up to 1755 CHARACTERS PER SCREEN. Maximum record length is limited(?) to 9,000 PET/CBM or 12,500 64 characters. Number of records is limited to the relative file capacity of your disk, but does not allow linking disks. THE ORACLE destroys two living legends: it allows more than 254 characters in a record, and the ENTIRE program loads into memory. You only need the disk to store your files and indexes! A nice feature a multi-level password system, which you can bypass if you wish). It will also produce PAPERCLIP-compatible files.

It has a few minor bugs. If you're not careful, you can skip a page in Create mode, causing an error when you try to access the record. I detest the manual, a step by step outline which does not even try to be an easy reference.

At last I have a data manager able to handle almost any task. All it needs is the ability to link disks together. I was so impressed that I ordered SUPER DOS for my 8050 disk drive so that I could create 500,000 byte relative files. Highly recommended.-J.P. Dellow

Word Processors:

EXPANDED PAPERCLIP, $125 from Batteries Included. For 8096 or SuperPET. ROM at $A000. 1 year limited warranty.

This is it! This is the one we've waited for - a word processor with enough internal capacity to handle even a large document at once. If you can't finish your sermon (or article) in 716 80-column lines, then it's too long for anyone to sit through anyway! EXPANDED PAPERCLIP is what WORD PRO 5 PLUS could and should have been. Serious writers, get yours today.

For PAPER CLIP's other features, see Midnite#11 and 12. The expanded version has the same options, plus a way to start a printout from any page automatically, or restart from the top of the current page. Header and footer margins and pitches are now set independently of each other and the main text, and the maximum line width is 250 instead of 126. Files saved with 1 line length can now be safely reloaded into a different line length. Highly recommended.-JS

Compiler Reviews

TINY BASIC COMPILER FOR THE PET/CBM Update, $20 from Abacus Software.
A Mickey Mouse product. TINY is a misnomer; it should be MINISCULE. Might be all right for those who want to see what a compiler does, but if you want something to use, forget it.-Nolan Brown

Disk Reviews

DISK/BAJ diskette labels, $3 per 10 from Quintet Corp.
This is one of those nice ideas that doesn't quite make it. It is an adhesive vinyl sleeve that attaches in place of a diskette label, so you can slide a new plain paper label in whenever you like. One problem is the cost. Ordinary labels are under a penny each. Even if a label leaves its backing when you replace it, you can always put the new label in the same spot. The other problem with the jackets is that the labels can slide out. Not recommended.-JS

Game Reviews

CANDY-MAN, $20 cassette or $28 diskette from Star Software. For PET or 64. Not available for VIC. 90 day free replacement.
REVIEW #1: The first (and only) decent PACMAN I've seen for PET. Has same maze as arcade version, except: 1) you can only see half the maze at a time (it scrolls up and down); and 2) the tunnel door from one side of the maze to the other opens and closes every few seconds. Has good sound, exceptional graphics, and superb speed! Two players can alternate. One of the best features is a pause to suspend the game indefinitely. Comes with 12-pages of instructions and key stickers. If only it used a joystick! Highly recommended.-Nolan Brown
REVIEW #2: The 64 version works just the same, with the obvious addition of color and joystick controls. I agree with Nolan Brown that having a virtual screen larger than what you actually see makes for an interesting game.-JS

GLIX-MAN, $15 cassette from S & M Software. Protected.
Another takeoff on PACMAN. Three different mazes. If you can get through the third maze, it speeds up and starts over. I wish there was a way to start on the higher level. The ghosts are hard to catch when you eat an energizer dot. When an occasional random character appears on the screen, the program crashes. Would be a nice game if it were finished. I have not seen the Nibbles & Bits version, but this version is not recommended.-Nolan Brown

VORTEX, $18 cassette from Magic Carpet. Protected.
This one was the hit of a club meeting. The kids, young and old, were gathered around two PETs all night long. VORTEX has excellent animation. You must blast through rotating rings of energy and hit the alien ship while avoiding bombs. No instructions, but very few are needed. Recommended.-Nolan Brown

Hardware Reviews

Upgrade Boards:

EXECOM 80-COLUMN BOARD Update, $250 + $75 installation from Execom:
With the exception of having to hook up one wire missing from the ZRAM board (see separate Update), our Execom board has worked perfectly for several months now. It runs all 8032 software except Chuan Chee's 40-column converter. Still recommended.-JS

ZRAM BOARD Update, $495 without CP/M, $795 with it, from Madison Computers.
UPDATE #1: Our prior test was of an early prototype, carefully upgraded, but never reliable with our small-screen "8032." After sevweral trips to Madison for repair, we gave up and bought a production model. After hooking up 1 wire my Execom 80-column board needs, the new board works fine. The 4040 CP/M software has also been fixed.

Everything I have for the CBM 8096 is also available for Z-RAM. ZRAM is better organized than the 8096; you can easily use it without losing BASIC. Like the 8096, it can also hold ROM images. However, it is much more costly than the 8096. You can now buy separate CP/M computer boxes with an 8" disk for under $1000. That, with Amplify's COMMUNICATOR package, or Eastern House's STCP (see separate Update), will also give you CP/M, at a slightly lower cost than a ZRAM plus 8" PEdisk system. On the other hand, those won't let you use their 64K added memory in Commodore programs. Still recommended.-JS

UPDATE #2: Paul Schick has succeeded in creating a true CP/M implementation within the standard CBM system with lots of nice touches. It uses relative files, uses any IEEE drive in any combination, and allows CP/M and CBM files on the same disk. Much of the CP/M I/O is written in BASIC, yet speed doesn't suffer. You can easily add your own tricks into the system (I added definable characters and output to CBM files). You can boot one of several different versions, or have different system setups come up automatically, depending on where you boot from. For instance, boot from a Wini, and the Wini is drive a; device 9, drive 0 is drive b, drive 1 is drive c. Boot from the 8050 and the 8050 is drives a and b, with the wini as drive c. All definable. All or part of any drive can be allocated for CP/M.

Madison Computers and Lifeboat Associates sell CP/M software in Z-RAM format. I have used SUPERCALC, WORDSTAR, and DBASE 2 without difficulty. I fully recommend this system for anyone desiring or required to use CP/M. It really is the best of both worlds.-Keith R. Peterson

Disk Drives:

PEdisk II Update, $995 from CGRS Microtech.
UPDATE #1: A version for the 64 is now available that will reportedly offer the same speed advantages and compatibility disadvantages of this drive.

After several months, the PEdisk is still humming along. The only problem I've found is an occasional crashed sector. As a CP/M drive or in PET BASIC, it blows the doors off a CBM drive; it's at least 5 times faster. The main problems are still software incompatibility from BASIC with PET disk commands, and the noise of the constantly-turning 8" drive. I solved the noise problem by adding a front power switch and leaving the drive off until needed. My main use of the drive is to load my most-used programs quickly. Still recommended.-JS

UPDATE #2: I use this only with the Z-RAM CP/M system. It works very well, reading diskettes in IBM format from a Zenith at Commodore, a Digital Group that a friend has, and unknown systems at Lifeboat and Digital Research. It is read/write compatible, so that diskettes I sent out worked well.

I made two changes to my drive: an on-off switch in front, and a write protect/enable switch. The Z-RAM system seemed to wipe out 8" disks when fighting the expanded relative file problem introduced by Superdos to the 8050 - almost as though the 'enable expanded relative' command was written to the directory track of the 8" diskette. The write protect solved that problem (probably caused by the Z-RAM). I understand the case has since been redesigned.

For use with the regular CBM system, I found the drive functional and very fast, but cumbersome to use. Drive numbers are required, the utility disk has to be kept nearby, the commands are formatted differently, and I miss the standard Commodore disk operations. For use with my CP/M system, it's perfect; as a substitute for a Commodore drive, I don't recommend it.-Keith R. Peterson

Printers and Accessories

CANON AP400, $1,200 from AB Dick. Daisywheel printer/typewriter. 90 day full warranty.

Fairly large and heavy, but also fast at 20 cps compared to other printer/typewriters, though slow compared to printer-only daisywheels of equal cost. Excellent easy-to-use, heavy-duty keyboard with dozens of keys. Has self-correcting lift-off tape for errors. Correction memory is 500 characters long, and pitches include 10, 12, and 15. Includes format settings for forms, bold-face and underlining, subscripts and superscripts, plus special characters. Even includes centering and automatic carriage returns at word ends as you approach the right margin. Recommended, once you learn to use it.-Karleen Dude.

MODEL 5812 PRINTER STAND, around $165 (as set up below) from Royal Seating Corporation. For all printers. Price varies widely with options chosen.

I have been searching for a decent printer stand with these simple features: a place to put the printer, a place to put the paper supply, and something to catch the printer's output. Amazingly, Royal is the only company I've found that meets these requirements. All others let either the paper supply or output lie on the floor. Royal offers numerous models, but I chose the 5812-S as the cheapest general-purpose stand. It has a bottom-feed slot, or can feed from the rear. The similar 5812-P is cut out completely from the paper slot back, to ease rear feed, but could be a problem with very small printers. I added the 0640 facility compartment (to hold the paper supply), the 0885 mini-forms rack (to catch the output), and the 0099 locking casters (to move the printer around the room, though making it less stable during print-out). Assembly was quite easy. Available in many looks; we chose black steel with walnut formica top, over natural wood or chrome. Ask a local dealer to order it first. If that fails, Royal will give you the name of a nearby dealer. Once ordered, mine was delivered by UPS within a week. Highly recommended.-JS

Computer Language Reviews

VIGIL FOR THE PET/CBM, $30 from Abacus Software.

VIGIL (Video Interactive Game Interpretive Language) comes with 9 games and a 51 page manual. The games are pretty good, but the language seems much too cumbersome and limited. A machine language assembler would be much better, and not much harder, for writing games.-Nolan Brown

Magazine Reviews

COMMANDER Update, $22 monthly from Micro Systems Specialties.

Commander's firm understanding of the Commodore world, and their diligence in safeguarding the consumer are nowhere better illustrated than in the current August 1983 issue, which features a glowing 2-page review of WORDPRO 3 PLUS, written by none other than Steve Punter--its author!-JS

COMMODORE NEWCOMER'S NEWSLETTER, from Art Klinger.

Our review copy, #5, may have been the last, according to an editor's note, unless he got support from his sponsoring group. If it is gone, you missed something worth reading. Issue 5 was as thick as Midnite and full of information. But I can see why it would be hard to continue. The whole thing is Xeroxed, which costs a bundle and takes forever. It includes a lot of information from other sources - a Midnite article, a list of Torpet diskettes, several British ads for Commodore programs, and some Compute! ads. There are also original articles: VIC vs. SPECTRUM, Installing your Home Computer, Coding for Speed (reprinted here!), and columns. One warning: products were mentioned and evaluated from ads, that don't exist or don't work as advertised. We were also going to call Art up for leaving Midnite out of both lists of Commodore resources until we found ourselves praised in the publisher's comments. If it doesn't work out, Art, we'll be glad to print your stuff.-JS

INFOWORLD Update:

We like Infoworld this week; the 64 won over the Apple][-e in review!-JS

Modem Reviews

NEWSNET, information utility. No membership fee. $15 minimum/month (hourly fee varies from $18 to $100+). 1 free hour when join.

NEWSNET is a database of 100+ short-deadline newsletters on every subject under the sun. Most are brief, to-the-point, useful, and expensive. Since all are available by mail as well, the obvious advantage of reading via MODEM is fast delivery and the ability to automatically search up to 10 permanent combinations of words, which may then be scanned for headlines or read. When you call, new finds are reported immediately. Last night, for instance, it offered me 4 new articles on Commodore, 1 on the TRS-80 Model 100, and 4 new issues of United Methodist Information (code SS06). The service also offers mail to and from publishers, and notifies you of mail waiting when you log on. If it offered mail between subscribers as well, it would be a near ideal (but expensive) system.

For hardware, any 300 or 1200 baud modem will do, although you will want a disk or printer log feature in your terminal program to quickly save information to re-read at your leisure. A log is included in the Public Domain terminal programs by Steve Punter for PET and CBM (on our $15 Terminal Disk), but not for VIC and 64. Most good commercial programs for VIC and 64 include a log.

You reach NEWSNET (in Washington DC) on the phone via Tymnet, Telenet or Uninet. It comes with a coupon for one free hour of use. The best way to decide if you want it, is to try it. Even the most costly newsletters have a sample you can read at minimum cost. If a friend signs up and writes your account # in the top-right corner of the application, you get a $50 credit (mine is NET 480 if you sign up, and have no other member friends!)-JS

STCP Update, $130 from Eastern House Software:
[Though advertised, EHS reports the 64 version is not quite ready.]

This hybrid (hardware + software) terminal package is still first rate. It now works at 1200 baud in terminal mode, and although it won't receive a file from my Tandy 100 reliably at that speed, it will send one without difficulty. Carl Moser of EHS thinks the Tandy may take too long to respond to a "Wait" character (Control-S), but is also re-checking his program. At 300 baud, the two computers chat like long-lost friends. Thus far, I've not been able to use MCTERM or MICROTERM 64 with the Tandy. The Public Domain program on our Terminal Disk downloads happily from the Tandy via disk log, but has no way to return files. Remember to swap wires 2 & 3 in the RS232 cable between the 2 computers, or buy a $30 "null MODEM" to do the same thing.

As now delivered, STCP leaves ASCII files on the CBM disk drive in TRUE ASCII - great for SuperPET, but unreadable by most PET programs. If you want them translated to PETSCII on the way in, as in the first release of STCP, Carl will give you the simple change. The unit uses only 0-5 volts as delivered, but provides the negative voltage needed by my RS232 MODEM when you add 2 wires. The stand-up style board fits in the $A000 socket. A lay-down option is also available that includes a socket for another ROM at the same address, keeping for itself only the last few bytes. Since MICROMON uses those only for the release date, use daily. It is made all the better by Carl Moser's well-earned reputation for support after the sale. Recommended.-JS

Utility Reviews

SECURE Preview, $100 from Distribution, Unlimited. Program encryption kit.

This company is advertising a new program encryption kit that "consists of a leather-walleted electronic key, a cassette, a comprehensive manual and registration card. One key may be used for hundreds of programs to be encrypted or original keys can be created for each piece of software. The unit is compatible with BASIC, composite and Machine codes and produces 256 encryptions of single programs at random." We've not seen it yet to prove its existence, but does seem like an interesting concept.-ES

COMMODORE 64 REVIEWS

Commodore 64 Assembler Reviews

MAE 3.Ø, $99 from Eastern House Software. 64 version.

REVIEW #1: MAE is unique in providing a co-resident ASSEMBLER, EDITOR, MACHINE CODE MONITOR, BASIC and WORD PROCESSOR. I don't know how they could have worked any more in! Everything works well, too. Machine code monitor is an old standard. Line-oriented editor provides move, copy and delete functions. With extensions, it becomes a word processor - more than adequate for documentation and letter-writing. Does not work with 1515E printer yet. Very nice people and very good telephone support from EHS. My only complaint is that the very thorough documentation needs an index and quick reference section to find what you need. An extremely good product. Highly recommended.-Mark R. Brown

REVIEW #2: Popular Macro Assembler, enhanced for the 64. (See Whole PET Catalog, p.83.) Has several new features not found in earlier MAE versions. You no longer have to put an asterisk in front of a zero page operand. Two new pseudo ops were added, .SL and .SH , but aren't supported by the relocating loader yet. Provides example source files and addresses of user groups (like ATUG and TPUG) that distribute MAE source code. ATUG has lots of old PET/CBM source code ready for conversion to 64. Overall, my favorite assembler. MAE features outperform any other 64 assembler. Highly recommended.-Mark Niggeman

64 ASSEMBLER, $4Ø-$5Ø from Commodore.

An improved version of the CBM ASSEMBLER. It now has MACRO capabilities, very similar to MAE. Editor and Assembler are two separate programs; Assembler saves object code to disk - very handy if you do rather large assembly work. Provides 2 versions of object code loader. [JS says it has undocumented conditional assembly, making] it a good second to the MAE assembler. Unfortunately, you aren't given any example source files, and the 2 monitor programs have several errors. Still, if you can't afford MAE, this assembler would be a wise choice. Recommended.-Mark Niggeman

Commodore 64 Book Reviews

THE ELEMENTARY COMMODORE 64, by William B. Sanders; $15 from Datamost.

REVIEW #1: It does all the Commodore Users Manual was meant to do, and more. Writing style is light and conversational, but very thorough. Makes good use of line drawings, demonstrating key concepts and principles. Helpful demo programs are generously scattered throughout, and unlike the Commodore manual, they all RUN. Sections I found most helpful were those on disk file handling and printer operations, neither of which are covered elsewhere. The ring binder lets the book lie flat. Price is rather high for paperback.-Rich Westerman

REVIEW #2: Henry Feinberg of 415 E. 85th St., New York NY 1ØØ28, has compiled an errata sheet for this book. If you want it, send him the usual stamped reply envelope and something for copying costs. The book is selling very well, and has the huge advantage of being out first, but is so poorly printed, I had trouble reading it. Like most such books, it ignores relative disk files. Recommended only until something else comes along.-JS

Commodore 64 Business Reviews

Accounting and Finance Programs

64 CHECKBOOK MANAGER, $35 diskette from DES. 30 day full warranty, with small replacement fee afterwards. Printer would be useful.

PLUSES: You can search several ways to find a check. Uses a built-in security password. Screen display looks neat. MINUSES: It has no quit function. Would be nice if you could catalog your files to remember their names. I did not like it as well as parts of SOMI-CHECK (see below).-Nita Rybolt

SOMI-CHECK, by Darold Rupp; $30? diskette from Somi Corp. No warranty.

PLUSES: To save time, you just hit RETURN if you agree with suggested answers under the blinking cursor. When you enter check #100, the next one is 101 and so on, but you must change the date. Can set up different accounts to sort checks later. MINUSES: Reports are crowded on the screen and hard to read. I have no printer to see how it looks on paper. When balancing, it does not allow "interest add on only service charge minus." Reports are easier to read on 64 CHECKBOOK MANAGER, but I would not use either one myself.-Nita Rybolt

TAX-MAN, $40 from Saura. For VIC or 64.

Fills out Federal Income Tax forms 1040 and G, and prints results on included tractor-fed official forms. The only visible purpose of such a program is to edit mistakes before you make them on the official form, and to do the math. Since the IRS gives you spare forms and does the math for free, this program handles another chore that is easier to do WITHOUT a computer. You cannot accumulate daily income and expense items for year-end totals, nor can you edit faulty entries, unless you discover the error before leaving the correct line. Instructions are 2 sheets of dot-matrix printout, and 5 copies of forms. Naturally, you'll need a new program and forms next year. Since $40 will pay a tax preparer to fill out the forms, TAX-MAN is definitely NOT recommended.-JS

Data Bases and Mail Lists:

INFOMAST (VERSION 1.2), $150 from Rabbit Software Limited. Requires 1541 disk drive and 1515/1525 printer. Protected.

INFOMAST is really three programs in one: a database, a programmable calculator, and a word processor. The manual describes numerous features, such as easy screen formatting for entering data, sorting, setting key fields, merging data with the word processor, and even a small programming language for automatically doing some tasks. However, I had some major and minor problems. Though the program detects disk errors, it doesn't clear the error channel on the disk; the red light flashes constantly. To correct any typographical errors when you first set up a file format, you must re-type the entire format - quite frustrating for poor typists setting up complex files. Once you have set the format, the program prepares and saves the format to a blank diskette, and detects any errors. But when it finds errors, it ignores them; you lose your format and have to start over. DON'T USE CHEAP DISKETTES. Worst of all, when I tried to recall a record, I got an illegal quantity error. If you can stand the initial pain, INFOMAST has many unique and useful features; the programmer says updates are coming. Not recommended for anyone with a low frustration level.-Michael E. Willis

NAME MACHINE Update, $30 from Commodore.
Does your NAME MACHINE stop dead in its tracks, at no particular location, then return to life a few minutes later? (Collecting garbage?) But its price is nice, and it serves our collector-organization newsletter well.-Gerald Smith

THE ORACLE, $395 (Can.) from Batteries Included. For all CBM/PETs or 64.
See under Business Reviews.

Electronic Spread Sheets

EASY CALC RESULT, $90? cartridge from Computer Marketing Serv. For 64/1541.
A simpler version of CALC RESULT (in Midnite#13). It retains almost all the good features, drops the five-languages and three-dimensional capability, is contained completely on cartridge, and needs the disk only to store worksheets. Manual seems easier to use, and I like the stand alone cartridge. Most people will prefer this version over the original. Highly recommended.-Larry Woolard

Word Processors

QUICK BROWN FOX Updates, $65 from Quick Brown Fox. For VIC or 64.
Snubbed again! QBF sent us a wire just before issue 13, promising a review copy. However, they still haven't sent us one. Over ES's objections, I killed a review I'd already written, and the juiciest part of Angela Reiser's comments from Foxfire Systems, pending a full review. Oh well, wrong again...
QUICK BROWN FOX has one legitimate market: the person who wants a text editor in ROM. To the good, QBF 64 uses more columns for text than the VIC version, but still fewer than the 40 available. It also has normal characters, rather than the strange squished characters of the first VIC version. Its manual is fairly decent, it has a large 34K text buffer, and it includes most expected options of major word processors. However, you're getting much less program than EASY SCRIPT ($15 cheaper and one of the most powerful word processors I've seen on any micro along with WORDSTAR, PAPER CLIP, WORDPRO and WORDCRAFT).
It has some major faults. It is line-oriented rather than screen-oriented, making editing of prior lines cumbersome at best. It has a short 30 character writing line on a 40 column screen, whereas others have from 40 to over 100 columns (better for multi-column reports). QBF is teletype-oriented, with its menu and text scrolling off the screen, while most other quality word processors use a status line and a stable screen. The DELETE key doesn't delete; you must use the LEFT-ARROW, demonstrating that this former OSI program doesn't use the full power of Commodore computers. Fran Donovan reports QBF does not work on current production 64's (he returned QBF for the VIC version). Worse yet, an industry paper quoted the same VP who promised our review copy, saying QBF will shift from cartridge to diskette for Commodore products. If so, forget QUICK BROWN FOX. The bottom line? Still not recommended.-JS

SCRIPT 64 Update, $140 from RTC (Canada) or Computer Marketing Serv. (U.S.)
SCRIPT 64 is the same program favorably reviewed in Midnite#10 under the title RTC-4. The built-in dictionary is said to hold up to 20,000 words.-ES

WORDPRO 3 PLUS/64 Update, $89 from Professional Software.
UPDATE #1: It now has a 30 day limited warranty on the media.-JS
UPDATE #2: WORDPRO's character values for the CBM printer enhancement were the old PET 4022 printer codes and did not match the current 1525e printer enhancement code. One thing I like about the WORDPRO 3+/64 update is that you can change screen, background and cursor colors.-Western Illinois PUG Newsletter

Commodore 64 Education Reviews

FACEMAKER, $35 diskette from Spinnaker. Drawing game for elementary ages, for 64 or VIC. 30 day limited warranty.

Excellent video version of Mr. Potato Head. You use only 2 keys to select from a widely-varied menu of eyes, ears, noses, mouths, and hairlines. Once the face is defined, you tell it to wiggle its ears, smile, wink, or stick out its tongue. Also includes a Simon-like game in which the head makes faces at you, and you type in single-character commands to duplicate its moves, up to 10 in a row, in a tiny step toward programming. Recommended.-JS

HEY DIDDLE, DIDDLE, $35 from Spinnaker. Joystick optional. Rhyme game for 64.

For ages 3-10, but even fun for adults who don't know the rhymes. Displays high resolution graphic picture with 4 rhyme lines. Levels 1 quickly displays a series of 30 pictures and plays the tune (entertains 3-5 year olds). Level 2 shows 4 lines, then slowly displays picture, with tune following. You request the next verse. Level 3 has several play options (number of verses, number of players, with or without time limits). You must arrange into correct order 4 or all 8 lines of the verse displayed in random order. When done, the picture and tune are provided. Good for children who read. Graphics and tunes are very well done. Recommended, but has limited use (an 8 out of 10).-Roy Wagner

PIPES, $35 cartridge from Creative Software. Plumbing simulation for upper grade school, for 64 or VIC. 90 day limited warranty.

Uses simple character graphics to teach you how to buy and connect pipes to plumb up to 5 houses into a water supply. The sounds are numerous, varied and appropriate, but quickly become annoying. You can move pipes around, once purchased, but cannot return them to the store. There is also a limited supply of each kind of pipe. You are rated according to the amount spent and the accuracy of your installation (that is, leaks!). Excellent simulation.-JS

PRIMARY MATH SERIES, $30 diskette from Comm*Data. 2 level addition or subtraction tutor for grades 1-4, for 64.

Displays problems in big letters. Level 1 is single-digit math; level 2 is 2-digit math. Graphic dots show how to work problem. Student types answer, right column first. Gives random beeps for correct answer; gives Bronx cheer for wrong one, plus correct answer, and counts remaining dots. Gives summary after 10 problems. Works as well as Public Domain math programs, and has more color and sound, but lacks their "reward" pictures. Nothing to spend $30 for.-JS

TOOTH INVADERS Preview, from Commodore. Dental game for 64 or VIC. $30.

First arcade game to gain American Dental Association approval (no kidding!). An honest-to-goodness non-violent educational dental-hygiene game for kids. With a tooth brush guide a man through 2 rows of teeth. Then enlarge the image until you see little green plaque particles, deposited by Plakman, that you must brush away. If you touch Plakman, a colorful balloon lifts your man away. Even if you've cleaned a tooth, you can't get particles between teeth without dental floss. If you take too long, teeth rot and fall out. Though it lacks game variation, it has very nice graphics, particularly on the 64.-Sheldon Leemon

TYPING TUTOR, $20 cassette or $25 diskette from Taylormade Software. For VIC or 64. 19 typing lessons. VIC version reviewed in Midnite#12.

Great for beginning typist. Very colorful. Has lessons, practice, and timed-text options. As a typing refresher course, I raised my speed over 10 words/minute. It only allows 1 space after a period instead of 2.-Nita Rybolt

ANNIHILATOR Update, $20 from Victory Software. Requires joystick.
Is very similar to DEFENDER, complete with smart bombs. If your skill is like mine, the game lasts about 1 minute, just like the arcade game. After 4 or 5 games my left hand gets all cramped up. Graphics are pretty good. My first tape wouldn't load. They replaced it promptly without a hassle - good P.R.!-Bob Zimmerman (Commodore Newcomer's Newsletter #5)

CANDY-MAN, $20 cassette or $28 diskette from Star Software. For PET or 64.
See under Game Reviews.

CHICKEN CHASE Update, $20 on cassette from Nibble & Bits, Inc. One player game. Joystick required.
You control a chicken through a grid of 16 squares. Hawks descend the vertical lines, gumpies move on all lines, and when you enter certain chicken houses, fast moving wolves are released. Use fire button to "hyper-hen" to a new random location. Level 1 has one gumpy and one wolf in an unknown pen; each of 8 levels adds an extra wolf and gumpy. Graphics and sound are excellent.
This is the hardest game I've seen. My ten year old son who can score 200,000 in PAC-MAN and 300,000 in DIG-DUG has yet to complete level 4 after 3 weeks. On the 64, you can POKE speeds of all four moving creatures. It also has a pause/resume feature.-Vincent J. Mooney Jr.

COLLISION, $25 cassette by Topologic. Compiled BASIC game.
Similar to SNAKE. Object is to run your opponent into obstacles. Fair sound and graphics. 9 levels of play. I didn't find the game interesting for long.-Wayne Halcomb (CUG of St. Louis Newsletter)

COLLISION COURSE, cassette or diskette by P.M.S. Joystick. Compiled BASIC.
Try to steer your space ship through an antimatter storm. Joystick response is very slow. Not recommended.-Wayne Halcomb (CUG of St. Louis Newsletter)

CRUSH, CRUMBLE AND CHOMP, $30 cassette for VIC or diskette for 64 from Epyx. 30 day media warranty. Strategy game.
64 diskette version lets you define your own monster. VIC cassette version takes forever to load. As usual, manual is excellent, including full details on your setting and options. Strategy-type action, in which you, the monster, try to achieve one of several chosen goals, such as survival, or destruction, in one of several famous cities. Your options in any one move include such fun things as stomp, crush, fly, breathe fire, or scream. Graphics are colorful, user-defined characters, and sounds are fairly realistic, plus a beep to move. Recommended if you read well and like strategy games and monster movies.-JS

DOT GOBBLER, $30 FROM O.E.M. Inc. For VIC or 64.
Haven't seen a better PACMAN version for the 64 yet. Uses redefined characters rather than sprites, making Gobbler and Ghosts small. Colors and sound are good. Has 9 different speeds (9 is blindingly fast). Looks like a converted VIC program, because playing field is only 22 characters wide, and only uses one joystick for 2 players. Overall, a very nice game.-Nolan Brown
[The cartridge is non-standard and doesn't always make proper contact.-JS]

FORT APOCALYPSE, $35 from Synapse.
If you can find it, this will give you not only arcade action, but as my son said when I lost, "Dad, your adventure is over." If NEUTRAL ZONE is game of the year (it is?-JS), this should be the game of the century. In this game you have

three greats: great graphics, great sound and great adventure. Terribly addictive, possessive and recommended for the videoholic!-Robert Snyder

FROGGER Update, $35 cassette or diskette from Sierra On-Line. For VIC or 64. Joystick optional. 90 day replacement warranty.

It takes a while to load, and my copy does not always load correctly. Still, it's my favorite game for the 64 so far, and makes the Apple][version look silly! Excellent graphics, sound and game play (better than the arcade version). Has Pause feature, slow and fast game speed. The first 3 levels are easier than the arcade, but each successive level gets more difficult. Highly recommended (even if you own LOGGER).-Tom Green

GORF, $40 cartridge from Commodore. For VIC or 64.
See under VIC 20 Game Reviews.

GRAVE ROBBERS Update, $15 from Victory:

A less-than-spectacular graphic adventure game. The logic behind the adventure makes very little sense to me. The whole thing, from the start to the time that you get the diamond and walk out, takes about 5 minutes or less.-Bob Zimmerman (Commodore Newcomer's Newsletter #5)

GRIDRUNNER Update, $35 cartridge from HES. Arcade game for VIC or 64.

UPDATE #1: Centipede-like shoot-em-up. Zap snake-like things that come down the screen at you row by row. Enemy ships shoot along rows and columns from the screen's edge. Each shot deposits or destroys a dot that grows and zaps the column it is in. You can only move in the lower part of the screen. Colors are pleasant, sounds are numerous and appropriate, if not pleasant, and action is smooth and hectic. Has enough levels (32) to satisfy anyone. Both a U.S. and U.K. best-seller. Probably too hard for beginners, but recommended.-JS

UPDATE #2: The best arcade-type game I have seen for the 64. Very fast, with excellent graphics and sound. If you like fast action, this one's for you.-Wayne Halcomb (CUG of St. Louis Newsletter)

JAWBREAKER Update, $30 diskette from Sierra On-Line. Maze game for 64.

Excellent takeoff on PACMAN for younger gamers. Instead of a full maze, you wander across horizontal levels, eating dots, and suckers, and being chased by rolling happy faces (called jaw breakers). When certain dots are red, you eat the happy faces. Jump levels through moving holes in horizontal walls. When you clear all dots on a row, a toothbrush cleans your teeth. When caught, all your teeth fall out. Color is cute, action is involved, smooth and detailed, but not hectic, and sound is excellent (like a carnival organ). Recommended.-JS

JAWBREAKER II, $35 cartridge from Sierra On-Line. For 64.

Not noticeably different from the earlier disk version, but may give you more time to eat the jawbreakers on a power pellet. Given a choice, avoiding disk loads is well worth the extra $5. Recommended.-JS

JUPITER JUMPMAN Update, $25 cassette or diskette from Epyx:

UPDATE #1: JUMPMAN has an unusual bug when used with some older 64's; it works fine for a month or so, then dies. A fixed version is out, identified by a small gold dot on the outer box.-Bill McDannell

UPDATE #2: FANTASTIC!! The only game that has kept my attention for more than a half hour. I wasn't impressed until I got moderately good; it is quite a challenge at first. But I've spent around 12 hours just playing it so far and am still addicted. I'm up to 17000 points.-Keith R. Peterson

UPDATE #3: A thinker's variation on the DONKEY KONG theme. Has plenty of user set variables, such as 3 game levels and 8 speeds. My favorite feature is the high scores and bonus scores. Excellent use of colors and sound. You need a different strategy for each of 30 screens. A 3 year old can have fun at speed 8; it challenges the best at speed 1. Very highly recommended.-Roy Wagner

UPDATE #4: Best arcade game I've seen for CBM computers.-Sheldon Leemon

METEOR MADNESS Update, $25 cassette or $30 diskette from Softplus. Uses joystick. DOS protected. 90 media warranty + low cost replacement after that.

For 1-4 players. Fairly easy; can be played by most people. Shoot meteors as they get closer; more points the smaller they are. Gets harder as you progress, but in the first week, my boys were up to the 32nd screen (of 47). Needs more kinds of activity. Would recommend it for average arcade players, but skillful players would get bored quickly.-Nita Rybolt

MOONDUST, $37 cartridge from Creative Software. For 64. Requires joystick.

Beautiful game, in which you guide a team of creatures through egg-laying and the growth of a new being. Very reminescent of the Star child in the movie 2001. Beautiful high-res graphics, and pleasant semi-random multi-voice music. Several options and variations. The game definitely grows on you. At first, I thought the game itself was the sign-on sample play. In the hands of a skilled user, the team behaves beautifully, much like a dance team led by an a master. Perhaps best of all, though the game can be challenging, it is still relaxing, something we've really needed in an arcade game. This is the first truly original game I've seen in a long time. Highly recommended.-JS

NEUTRAL ZONE Update, $35 from Access Software on cassette or diskette. Arcade game for 64. Early copies protected by Dongle. No warranty.

Color graphics are stunning space scenes. Sounds are ordinary, but appropriate. Became boring, because all you do is sit and shoot, even though it's the best of its type. Targets have to be led, shots shrink into the distance appropriately, and some enemy ships are so fast they must be caught by pivoting 360 degrees. Access called us twice for sales, but showed no interest in reviews. I enjoyed store-testing NEUTRAL ZONE, but would never buy it.-JS

NUKE WAR, $16 from Avalon Hill. For 64.

Update of PET version with a few twists. Spattering use of sprites, sound, color. You can even watch mushroom clouds. Fairly good simulation. At game end, no one wins; you just get an advantage in the next game. Recommended.-JO

PEGASUS ODYSSEY, by Mike Blackman; $30 from Comm*Data. Arcade game for 64. Requires joystick(s).

True 2-player game, with both playing against the computer at once; also 1 player game. The task is to fly, by pressing FIRE to flap wings, and steer over bats that attack you from a cave. By landing on them, they are destroyed, but leave an egg which bounces around before landing. It too must be stomped upon, or it will hatch another bat. Colors are well done, with plenty of noise, though nothing I'd call music. Briefly enjoyable, and helps teach momentum.-JS

ROBBERS OF THE LOST TOMB Update, $20 from Timeworks. 90 warranty. DOS Protected. Adventure game for 64.

Very neat looking 3 dimensional adventure game. Uses sprite graphics and some very good sound effects. Object is to move about a tomb in Egypt, find 4 tablets and get out alive! There are mummies, snakes, ghosts and bottomless pits to avoid. Find a blue ruby to ward off mummies. You can spend hours playing this game. It has me hooked. Overall, it is a very simple adventure compared to Scott Adam's Graphic Adventure series, but is very cute.-Mark Niggeman

64 GAMBLER'S PACK Update, $40 from DES:

(Contains Casino/Draw Poker, Keno, Blackjack and Mind Boggler). It seems to work okay. One nice thing: you do not lose real money. The cards aren't as easy to recognize on Blackjack as on Poker. When you think you are winning in poker, you seem to lose anyway at the end. Recommended if you enjoy playing this type of game. I like it better than the Atari version.-Nita Rybolt

SUPERCUDA, $30 diskette from Comm*Data. For 64.

REVIEW #1: For $10 more, you get an update of PAKACUDA on diskette, a hard case, and 3 differing screens per level. The music is even less pleasant than the original mediocre version. The board you reach through the bottom exit of the first screen is quite hard to finish. An improvement over the popular original, but not worth it if you already have PAKACUDA.-JS

REVIEW #2: A much improved version of PAKACUDA, with 3 "screens" accessed by going through "doors" at the top and bottom of the screen. SUPERCUDA is "copy-protected." Without any warnings to the user, this produces some very unwholesome effects. After typing load and run commands, the disk drive chatters. About 5 seconds later, the disk error light comes on and the program finally appears. Fearing disk problems, I ran the directory, which said:

```
46 Supercuda  prg
46 Backup     prg
 0 Blocks free
```

Fearing my disk directory had been damaged (only 92 blocks total), I removed the write-protect tab and did a Collect. The directory then reported 572 blocks free. The next time we loaded SUPERCUDA to run, the disk chattered again. This time the screen cleared with the Commodore sign-on, and the program would no longer run. If Comm*Data wishes to use directory tricks to protect its programs, they should warn customers never to remove the "write protect" tab. A clever micro-freak can "break" almost any copy-protection scheme. Innocent users need to know how to protect their merchandise!-Bill Brown

REPLY: When you get a new disk-based program, your first chore is to back it up. If you can't, check the guarantee. If none, return the program for a refund. Never remove the write protect on a protected diskette. Still, companies should mention protection in their instructions.-JS

SWORD OF FARGOAL, $30 diskette from Epyx. Adventure game for 64 (VIC version may be bugged.) Requires joystick. 30 day media warranty.

Joystick-controlled adventure in which you seek a sword in a dungeon. The dungeon is lit by your lantern; only places you've been are visible. At first, your goal is to explore, collect treasures and spells, and fight when you must. Temples are fairly safe resting places, although some monsters are irreligious. Each time you enter a level, it changes room arrangements. If you hang around a level too long, monsters from downstairs harrass you. No way to tell traps apart from treasure. If you don't collect gold when found, monsters may swipe it. Other thieves are after your spells, maps, etc. Overall, BMD considers it the best adventure game for 64 so far, although still very frustrating (it has no 'save game' feature). He still hadn't retrieved the sword after 4 hours. Highly recommended.-JS and Bill McDannell

TEMPLE OF APSHAI, $35-40 diskette from Epyx. Adventure game for 64.

UPDATE #1: PET game of the year a couple of years back. This updated version is just the same, except for the graphics quality, which is vastly better than the PET version. Best are the Olde English character set used during the bargaining with the innkeeper, although the user-defined characters for the adventurer and monsters are all much better and more colorful than in the PET version, and the sounds are likewise better. Still highly recommended.-JS

UPDATE #2: Excellent graphics and sound. Four levels of play. Explore over 200 rooms for treasures, but watch out for over 20 different monsters and traps. I've played this one for hours. I wasn't much on adventures till I played this one. Now I'm hooked.-Wayne Halcomb (CUG of St. Louis Newsletter)

WEATHER WAR II, $25 from Magic Carpet. Arcade for 64.

1 or 2 player ARTILLERY-like game, using hail, rain, tornadoes and lightning. You must consider windage, plus occasional acts of God. Helps understand vectors. Graphics are better than in earlier PET version for Cursor, and are now in color. Sounds beep in various tones. Play is still fairly slow. Still a nice game, but don't buy if you have WEATHER WAR I or ARTILLERY.-JS

Commodore 64 Hardware Reviews

Disk Drives and Storage Devices:

STRINGY FLOPPY Preview, $199 from Exatron. Cartridge tape storage device.

REVIEW #1: A continuous tape recording device in a "wafer" cartridge. It is very easy to overwrite a program already on a wafer. To save a new program you must know the exact name of the prior program on the wafer, do a verify (one minute) and then write to that location. The wafers are sequential, and cannot use random or relative files. I know of no programs that come in this form. If you can't afford a disk drive, get a RABBIT.-CCC of Toledo Newsletter

REVIEW #2: Exatron's **STRINGY FLOPPY** is "in" this year, but doesn't make any more sense now than 3 years ago. Although loading is about as fast as from a 1541, saving isn't. Reading the directory takes up to 2 minutes. But the real killer is price. Its special cassettes cost more than floppy diskettes and hold far less. Trade journals are also reporting retail prices of $5Ø for these units on other computers, so Exatron isn't doing VIC owners any favors.-JS

PEdisk II Update, $995 from CGRS Microtech.

A Version for 64 is now available. See review under Hardware Reviews.

Expansion Memory and Mother Boards:

CB/5, $7Ø from Cardco. 5-slot mother board for the 64. Lifetime full warranty.

Finally, here's a multi-cartridge mother board for the 64. Why did it take so long to develop? There's more to cartridge-swapping on a 64 than on a VIC. At least one board (PTI's) has already been recalled due to the difficulty of handling several cartridges at once on the 64. Cardco says they've solved the problems and will ship soon. Meanwhile, we're testing a "top-less" prototype.

Seeing this board in action is like watching a Christmas tree, with 22 LED's (light-emitting diodes) in 3 different colors. It also includes 2 toggle switches for each of 5 gold-plated sockets, a fuse, a RESET button, and a half dozen IC's (integrated circuit chips) that live on a fairly-large 6" by 9" fiberglass board. They show which memory arrangement is being requested by each cartridge, whether the cartridge has power, which ones are enabled and which memory arrangement is actually being passed to the 64 by the combination of cartridges currently on. The switches let you separately power each cartridge up or down, and give or deny access to the 64, after each is powered. The 64 needs all this. EASY CALC RESULT, for example, wants a different memory map than other cartridges; the only way to keep it from having its way is to keep both its switches off. Similarly, the C64-Link takes over enough to give its power-up message unless both its switches are off or another cartridge is live.

The only problem so far is that neither WORD PRO 3+ nor PAPER CLIP will tolerate the board being plugged in at all. Jamie also learned not to plug the mother board into the 64 with the power on (that ban includes any cartridge or mother board on either VIC or 64.) Fortunately, Cardco has a wonderful warranty policy. Meanwhile, given reasonable care, this mother board works quite well with most programs. If you need a one, this should be as good as any. Just be sure to try it with your cartridges and programs before you buy.-JS

C64LINK MOTHERBOARD, $65.5Ø from RTC or Computer Marketing Services.

Lets you attach the C64LINK parallel to the board, and 3 additional

cartridges perpendicular to the board. Each port has a switch. Since the connection to the C64 is parallel, you can connect more than one of these boards. There are some problems. 1) Even if the C64LINK switch is off, the 64 starts up with 8K less memory. 2) You cannot use cartridges with a recessed connector without cutting back the cartridge case. (Even then, some may not work). 4) There is no reset button to clear memory if you want to switch from one game to another. It is well constructed, but so far I have no use for it. I'll keep mine, but don't recommend it.-Roy Wagner

THE SOFT-AWARE BOX, $184 from Soft-Aware. Motherboard for VIC or 64. 90 day and 1 year warranty.

This company is out of business. They charged my Master Card in May, but never sent me the product. The person who now answers the phone suggested I complain to the authorities, and I have. (He also suggested they weren't crooks, just amazingly incompetent.) Obviously not recommended!-Dr. Jim Condon M.D.

Interfaces:

THE CONNECTION, $119 by Tymac Controls Corp.; dist. by Microware Dist. Parallel printer interface.

The "Cadillac" of serial to parallel printer interfaces for the VIC 20 and Commodore 64 microcomputers. A 6502 microcomputer interface, with ROM (operating system and graphic) and RAM (approx. 2K buffer) chips. It has 3 selectable print modes via the open statement: 1) Graphic Mode = CBM graphic characters; 2) Conversion Mode = converted graphics to English format; and 3) Transparent Mode = pass thru unaltered. It is printer specific (made to run only on a particular printer in CBM graphic mode), so that it can use the printer's graphic capabilities. Can be reconfigured by ordering a different ROM chip from Tymac. Will work with any parallel printer. My configuration is a 64 with an OKIDATA 92. The Commodore printer test runs perfectly, except for reversed alpha/numerics (reversed graphics are ok) - a design trade off for both RAM memory and printer speed. I have run WORDPRO 3+/64 and FLEX-FILE 2.1 with this interface successfully. Very highly recommended.-Robert P. Bartoszak

INTERPOD, Version 1.4, $150 from Oxford Computer Systems. IEEE and RS232 interface for VIC and 64. Guaranteed compatible with all programs.

Unlike other IEEE interfaces we've tested, it connects to the serial bus like Commodore accessories. There is no need to relocate it, and no problem with programs that use internal memory. It also easily links a VIC or 64 to a whole network of PET/CBM or other IEEE-488 devices, plus an RS232 printer.

When the computer addresses a device, INTERPOD pauses to see if any device on the serial bus will answer. If not, the call is transferred to the IEEE bus for a device to answer there. If not, and the device number is 4, it tries the RS232 port. It ignores the IEEE device when a serial device is on and sharing the same device, or it can arrange another address for the RS232 device. The RS232 port has all the usual setup options, plus unusual ones like a true break, a delay after carriage returns, and PETSCII to ASCII code conversion, controlled by sending commands to a command channel (secondary address 31 on its device number). The command channel also sends an error status on request.

We've only found two problems thus far. First, INTERPOD goes off and sulks if you turn the computer off and on without also turning off INTERPOD. A multi-plug switch solves this. Second, when re-checking IEEE disk status, INTERPOD adds garbage after the valid information, which hangs some data-handling programs. The cure, says the manual, is to send a "clear" command to INTERPOD's command channel before each new access. This is easy in your own programs, but impossible in compiled or protected programs. If you use file-handling programs, test them with INTERPOD individually. On the other hand, INTERPOD works fine with most DOS-protected programs. JUPITER JUMPMAN, for example, loaded very

quickly and easily from a 4040, not because INTERPOD is faster than the 1541 (it isn't), but because the 4040 didn't retry every sector several times like my 1541. Though it lacks the BASIC 4 and machine-language monitor of RTC's C64-LINK, INTERPOD is a most important new product. Highly recommended.-JS

Monitors:

BMC MONITOR, around $90.

The best and cheapest green screen monitor I have seen to date. Normal video cable needs a couple of pins switched to look good. Very high resolution, looks infinitely better than the Fat 40, and quite a bit ahead of a small screen 40. Of course, you have no color. However, there are about 4 or 5 different shades of green, so colors can be distinguished. The most serious drawback is the lack of sound. I usually run the monitor and a TV at the same time when I need sound. Still, if you ever plan to do any word processing or put your 64 to some serious business uses, this is well worth the investment.-Nolan Brown

COMMODORE 1701 MONITOR Update, $300 from Commodore.

A great monitor. Solid, bright, adjustable, easy to carry (with built in handles and handy front connectors), it's the best way to go. When the 8 pin 64's come out, it will be even better. I do wish the volume control was outside the case; you end up leaving the adjustment door hanging open.-Keith R. Peterson

LE MONITOR, $125 from PI Tech Ltd. 12" amber monitor. 1 year warranty.

This "Christmas Special" turned out to be a Black and White TV with yellow plastic glued to the screen. Worse yet, after 3 months the picture became unreadable. I returned the unit under warranty, and have heard nothing back in the 3 months since. Not recommended.-Dr. Jim Condon M.D.

[Jim reports that readers wanting a REAL amber monitor must look for the words "amber phosphor" in the ad. As his experiences suggest, only order from companies known to be reputable.-ED]

Printers and Accessories

COMMODORE 1526 PRINTER, $300-400 from Commodore.

REVIEW #1: 60 characters a second, true decenders, and a combination of friction and tractor feed. The tractor is placed before the rollers to keep the paper straight, so you don't waste a whole sheet every time you make another copy. Rumored to be an Epson 70.-Jerry Carter (CCC of Toledo News Letter)

REVIEW #2: Similar to the 4022.-Bill McDannell

REVIEW #3: It would not work with TOTL TEXT 2.6 or WORDPRO 3+. Commodore promises a software fix (re-burning the EPROM), so that the 1526 will run all programs that presently don't work with it.-Rich Westerman

REVIEW #4: Although the 1526 seems to be an excellent printer, the bugs make it unusable. The printer ribbon seems to have a very short life; it should have been a cloth ribbon. Three bugs are: 1) When the system is turned on, it locks on the first LOAD command to load a program from disk [until you] press RUN/STOP and RESTORE to reset the system. 2) The system locks up when long sequential files are SAVEd and LOADed with the printer ON and connected [but not when it's off]. 3) Secondary address #10 (resetting the printer) works too well [especially when used with] the program from the manual. When the printer resets on the PRINT#10 command, it forgets to turn the computer loose and the computer waits for a signal from the printer. RUN/STOP and RESTORE must be pressed to reset the system, [but] the printer cannot be reset as part of a program without stopping the program. [As for the manual,] there are 216 steps per inch, not 144; the default value for 6 lines per inch is 36 and must be reset every time

line spacing is changed; and the manual doesn't tell you how to set the printer for tractor or friction [see Printer Notes].-Bernhardt Sandler

See under Hardware Reviews.

CANON AP400, $1,200 from A. B. Dick. Daisywheel printer/typewriter.

MODEL 5812 PRINTER STAND, $165 from Royal Seating Corporation.

Other Equipment:

FLEXIKEY, $70 from Gosub International. 20 key numeric pad for 64 or VIC.

Driver needs cassette or disk drive. A very nice separate box that sits next to your computer, and connects via the user port. Adds second set of number keys, arranged as on an adding machine, along with spares, for such uses as math operators or hex notation. A mode key can define each key 3 ways, including up to a 3-key sequence from a single keypress, which may be saved and loaded. Each has a default value. Its weakness, like many such add-ons, is that a small software driver must live somewhere in memory and be enabled before the 64 notices the keyboard. Thus, you probably can't use it with the very best programs, because they undo software wedges and use all available memory.

Cardco plans a similar unit that can also plug into the internal keyboard connector. That approach could work with all programs. Meanwhile, Cyberia's totally software version of a keypad (see separate review) may be better.-JS

NUMERIC KEYPAD, $25 from Cyberia.

Turns keys below the "7-9" keys into a numeric keypad. A fine idea, lacking only a raised dot on the "5" key. Even includes new key labels. Won't work on fancy programs that disallow attached utilities, but should work as well as similar hardware units that attach to user port. Possibly worth having.-JS

10 [NUMERIC] KEY PAD, $70 from Quality Computers. For 64 or VIC.

Requires no software to run. Hooks up internally. Good quality, with all-metal housing (you can add keys). Also includes arithmetic operators */+-, decimal point and ENTER key. Cursor controls would have been nice, but add to the cost. Keyboard is sturdy, but on my model, non-numeric keytops aren't molded like the numeric keys. Has clear instructions and diagram, but doesn't mention that your dealer should install it to protect your CBM warranty. I couldn't figure out which end of the connector was polarized. All shifted functions of numeric keys work - especially handy when calculating in direct mode. An excellent investment if you work with a lot of numbers.-Mark R. Brown

STICK STAND Update, from K-Byte

15 hours later, I'm really starting to get excited about this accessory. It makes the old Commodore (or Atari) joystick much easier to use, and truly as good as the high-priced sticks.-Keith R. Peterson

VIDEO PAC 80 Update, $180 from Data 20 (or Protecto Enterprises). For 64.

You too can have an 80 column video, but only to a monochrome (green screen) monitor. The display is very solid and clear, although the scroll is quite dirty. I still use an 8032 for development work instead of the 64/80 pac, but otherwise, the 80 PAC would certainly make program development easier. You will find very few good programs to run on it, since most 64 programs are 40 column, and the I/O to the board is not as easy as one might expect.-Keith R. Peterson

Z80 VIDEO PAC, $300 from Data 20 (or Protecto Ent.). CP/M for 64.

Looks like a very good and complete CP/M implementation for the 64, 56K RAM, 80 column (B&W monitor only). My WORDSTAR test briefly seemed to work very well on it. Then my very-early-run board quit after 20 minutes, but DATA 20 was very helpful in determining the cause and fixing the problem.-Keith R. Peterson

Commodore 64 Magazine Reviews

See under Magazine Reviews.

COMMANDER Update, $22 monthly from Micro Systems Specialties.

COMMODORE NEWCOMER'S NEWSLETTER, from Art Klinger.

INFOWORLD Update:

THE 8*BIT BOZART: A San Francisco Journal of the Computer Arts, from Robert Sims. Monthly (we hope), $24/year +$12 for recommended software. For 64 now.

Does Bozart stand for Beaux Arts? The editor describes his dream thusly:

"I kept reading Compute, The Midnite/PAPER and TorPET, wishing there were a journal closer to home, aimed more at hermits like me, and dreamers and poets and painters and writers, to help them give form to their vague notions of what they can do with computers, and to help them pass the word when they figure it out."

The prospectus issue includes some very quotable ideas (see Readers' Comments), offers to help readers with problems, plans for a tutorial series of useful programs, a local San Francisco user group, an article on organizing computer info and gear, a review of DOS Wedge 5.1 and Ray West's PET book. The sample issue is 10 pages long, printed on a 1525 printer with ragged right margins using a Public Domain word processor. If it works out, issues do come out monthly, and members get the support offered, it could be worth the requested price. As noted, the rest of us don't do much for artist colonies and are a long way from San Franscisco. On the other hand, 10 pages per issue is pretty brief, and 1525 printer is fairly unreadable. I have a much warmer feeling about this newsletter than I do about Strictly Commodore, for example, which seems mainly for making money. But it takes a lot to start a magazine and keep it going, so let's reserve judgement a few more issues. And if it doesn't work out, Robert, how about doing a dreamers and poets corner for Midnite?-JS

Commodore 64 Modem Reviews

NEWSNET, information utility. No membership fee. $15 minimum/month

See under Modem Reviews.

STCP Update, from Eastern House Software. 64 version coming.

See other comments under Modem Reviews.

Commodore 64 Utility Reviews

HIGH RESOLUTION PRINTER PLOTTER, cassette from ScientiVIC Software. For VIC or 64 with 1515/1525 printer. **Printer aid.** $20.

This program turns your printer into an acceptable plotter. You can control the size of the plot and scale with a series of inputs at the beginning of the program. You can modify the program to plot whatever formula needed. A considerable list of reserved variables is given which must be avoided in entering your formula. Not fast, but that's not necessarily the program's fault. If you need to plot, this will do the job for you.-Larry Woolard

POWER 64, $100 diskette or cartridge from Pro-Line Software. **Programmers' Aid.**

I tested the disk version of this well known programer's aid. A good package with all the neat extra commands you want for serious programming. You can: scroll through a program with the cursor keys; automatically number, renumber or delete lines, dump BASIC variables, fix up BASIC pointers, give various single key instructions (you can define your own), trace a program in a number of ways, do a pattern search and replace, and set up a special work area to use with a BASIC program in memory. A nice touch is a command called WHY to help locate errors. Also included is MOREPOWER, with more definable keys to trigger a whole phrase, and an UNDO command to reverse the effects of an unwanted NEW. POWER 64 will load with PAL for a very nice assembly language programming package. The manual is well written, although the power (no pun intended) and flexibility of the program will take time to learn well. I prefer the instant-loading cartridge version. Highly recommended.-Larry Woolard

RABBIT, $40 cartridge from Eastern House. **Cassette aid.** 60 Day Warranty.

REVIEW #1: Truly outstanding in performance and value. The computer normally LOAD/SAVES an 8K program in 2 minutes, 40 seconds to cassette and in 22 seconds to the 1541 diskette. RABBIT requires just an incredible 32 seconds! This unbelievable utility also allows the user to verify, automatically LOAD/RUN programs, convert hex to decimal and vice-versa, test RAM memory, automatically APPEND [with a single comand] a selected program to another, and most importantly, HI-SPEED LOAD/SAVE DATA FILES (2+times faster than normal Commodore load/save). RABBIT commands can easily be incorporated into your programs if desired. Excellent manual. Very highly recommended!-Warren Gordon

REVIEW #2: Plugs into the expansion port of the 64 [and is] nearly as fast as the 1541 disk. The RABBIT also adds 12 commands, with some neat features: You don't have to press the Commodore key to load programs; program length, start, and end addresses are displayed during LOAD; any area of memory can be saved by specifying start and end address; programs can be loaded and appended to the program currently in memory, and all normal commands work with RABBIT. Mine has already paid for itself in just tape savings, let alone time savings. I highly recommend it.-Paul Scheuer (CCC of Toledo Newsletter)

REVIEW #3: It's easy to convert from regular format to high speed format. To get it to work, I had to hook a wire from the cartridge (housed in plastic, unlike the VIC version) to the cassette port. Recommended.-Mark Niggeman

UPDATE: Both the VIC and 64 versions can now read and write high speed data files, and may use up to a 1K data buffer for even faster file access.-JS

SCREEN GRAPHICS, $25 diskette or $30 cassette, from Abacus Software. For 64 or VIC. **Graphic aid.**

An excellent graphics language extension. Allows you to draw fancy graphics with only a few lines of BASIC-line commands, such as DRAW, CIRCLE, etc. Includes a very impressive demo of its capabilities; all demo pictures except sprites run on both versions. Reasonably fast. Bill McDannell considers it the best graphics package he's seen (one of his 3 best-selling programs). Recommended.-JS

THE STAFF, by P.M.S. **Music/sound aid.**

Music editor with one sample tune in BASIC. Many shortcomings. Sent mine back.-Wayne Halcomb (CUG of St. Louis Newsletter)

VIC 20 REVIEWS

VIC 20 Book Reviews

THE VIC REVEALED, by Nick Hampshire; $13 from Hayden.

This book dives right into the system, and gives brief explanations of some of the more frequently used routines in the BASIC ROM, [with] detailed descriptions of the VIC chip, the user port, and other complicated topics. It describes how the user can write his own BASIC commands and 'wedge' them into VIC BASIC. It also gives examples of high resolution plotting in BASIC and in machine language. Buy it!-Steve Garmon (CHUG Hardcopy)

VIC-20 USER GUIDE, by John Heilborn; $16 from Osborne/McGraw-Hill.

For me, reading this book was like reading a diary. Much of it is from earlier OMH Commodore Guides, of which Ellen and I wrote two. Compared to those, this guide is very short. This makes it more approachable for newcomers, but far less useful as a reference. It also gives up the key advantage of OMH Guides over competitors: full coverage of files, functions, and the machine-language underlying BASIC. The VIC Guide has only 1 tiny example of a sequential file (on cassette), and fails to even mention relative files. It includes a small memory map and hex-decimal converter, but fails to say why. In place of what has been removed, it offers chapters on game controllers (brief but adequate for control from BASIC), graphics (a good one, including high resolution and color) and sound. It isn't the book I'd have done, but better than most on the market.-JS

VIC 20 Business Reviews

QUICK BROWN FOX Update, $64 from QBF. Word processor for VIC or 64.

See under Commodore 64 Business Reviews: Word Processors.

TAX-MAN, $40 from Saura. For VIC or 64.

See under Commodore 64 Business Reviews: Accounting.

TOTL TIME MANAGER 2.0, $25 from TOTL Software. Version 2.0 for VIC, version 2.1 for VIC+8K, disk drive and printer. Version 2.6 for 64.

A set of 2 business utility programs used to manage activities by creating schedules and charts. Data is entered in the first program and printed out in one of the 56 possible bar charts in the second. Sorting or organization can by by person, project or activity. Documentation is very good.-VIC-NIC News

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VIC 20 Education Reviews

FOREIGN, $5 cassette from Farthest Fringe. For VIC. No stated warranty.
This is a simple drill and practice program. It asks the names of 72 foreign capitols, and rates you on the per cent you guess and spell correctly, also telling you how many were yet to go when you quit. Given the memory available, this is a fairly capable program, and reasonably structured and optimized. I wanted to fix a couple of things, and easily could - a plus. I don't know why it sometimes thinks I've already used my second chance - possibly key bounce on my RETURN key. Like most drill programs, it is quite boring and best suited to situations in which incentives can be offered for completion. Without a doubt, you can get a program to do about the same thing from most user groups. But it may be worth $5 (less than many user groups charge to copy a disk or tape) to have one that works immediately and without effort.-JS

See under Commodore 64 Education Reviews.
FACEMAKER, $35 from Spinnaker. "Mr. Potato Head" game for elementary.
PIPES, $35 from Creative Software. Plumbing simulation.
TOOTH INVADERS, $30 cartridge from Commodore. Dental game.
TYPING TUTOR Update, $20-25 from Taylormade Software. Typing lessons.

WORD QUEST, $12 from Soft-Sell. Word-search game.
The object is to form as many words as possible for a 4x4 grid generated at random by VIC. Any number of people can play. VIC will keep time and score.-VIC-NIC News

VIC 20 Game Reviews

BONZO, $20 cassette from DES. For VIC+8K.
A bit like APPLE PANIC, except that you can't dig. You wander around horizontal levels, picking up point dots and avoiding trolls. Both you and they can change levels by climbing ladders. If you get all the point dots, the monsters explode or vice-versa. Keeps track of high scores while it's turned on. The colors are quite good, and action is quick, detailed and smooth. Sounds are mostly simple beeps, but pleasant and varied. Possibly not enough variety for expert arcadians, but DES's best game to date. Recommended.-JS

BOSS, $40 cassette from DES. Chess game for VIC+8K.
Has excellent graphics, with a choice of colors, a clock, and a beep when it's your turn to move. Said to beat SARGON II, but we'll have to test that when we have more time. Meanwhile, it does exist and does run.-JS

COSMIC CRUNCHER, $30 cartridge from Commodore.
PACMAN in outer space. You control the Commodore Logo and eat the dots, dock at the space stations (energizers), while staying away from the satellites. Much more challenging than SNAKMAN, and much higher resolution. I have gotten nearly half a million points on SNAKMAN, but my high score on COSMIC CRUNCHER is only about thirty thousand. Recommended.-Nolan Brown

CROSSFIRE, $30 cassette from Sierra On-Line. For VIC. Keyboard only.
Defend a city 's rectangular street system against invading aliens. You may move or shoot in any of 4 directions. Shots are limited, but a refueling dump is

available, and running over bars when low on ammo gets added points, as does clearing the screen of aliens. The color is quite good and the sound is simple but appropriate. The keys are hard to get used to, but play action is good once learned. The aliens dodge at random, making it easy to waste shots, and some shoot high-speed bullets that are hard to avoid. If it used a joystick, I'd like it a lot more, but even as it is, recommended.-JS

CRUSH, CRUMBLE AND CHOMP, $30 from Epyx. For VIC or 64.
See under Commodore 64 Game Reviews.

DEADLY SKIES, $35-40 cartridge from Tronix. Bombing game for VIC.
You are in a helicopter, over a moving terrain (when was the last time you saw a stationary plane and moving ground?) trying to bomb cities that shoot back. Destroy bases, tanks and missiles hidden under cloud cover, using helicopter gunships, all the while avoiding enemy fire, UFO bombs, smart bombs, and asteroids. Strangely enough, your bombs won't pass through clouds. Play consists of holding down the fire button and steering a bit to avoid hostile objects. Unrealistic and boring. Not recommended.-JS

DEMON ATTACK, $35 from IMAGIC. Arcade for VIC. 2 year limited warranty.
Like GALAXIANS, except you only deal with a few attackers at a time, and most don't Kamikaze. After you shoot a bunch, more appear, with different shapes and fire patterns. Eventually the targets get smaller, their shots become sheets of fire, and you're in trouble. There are options to the game: easy or hard, simple or guided bullets, one player or two. The color is excellent, the graphics very smooth, and the sounds fairly well done, especially the raucous laughter when you inevitably lose. Well-done but unoriginal.-JS

EXTERMINATOR, $17? from Nufekop.
Almost no fun [frustratingly hard]. Harder than the real CENTIPEDES. I can beat it pretty easily on the first and second board, but on the third board, you're red and so is the board. That makes it almost impossible to play. The centipede is hard to beat!-Jamie Strasma

GORF, $40 cartridge from Commodore. Arcade game for VIC or 64. Joystick.
A good game for all space game enthusiasts. Uses only one joystick, and lacks the Galaxian stage of the arcade game. Graphics are smoother and colors look a little better on Atari version. Space Invaders is easy on both versions. Laser Wars seems to be much harder on the Atari Version. On Space Warp, the Atari version is rather boring, while the VIC version usually eats my lunch. On the Atari version, you can just sit down at the bottom of the screen and take potshots at little guys swirling out of the middle of the screen, while dodging slow alien bombs. On the VIC version, you are right in the middle of things and aliens like to run into you. Mother Ship, is also much harder on the VIC version. Every time the ship gets across the screen, it drops down one level, dropping bombs progressively faster. After the fourth screen, you start over at a faster speed. After clearing all screens for the third time, the Space Warp screen gets so fast, it is next to impossible.-Nolan Brown

GRIDRUNNER, $35 cartridge from HES. For VIC or 64.
See under Commodore 64 Game Reviews.

LAND OF $10 BILLS, $10 from The Byte House. Text adventure game for VIC. Joystick optional.
You tell the computer which direction you want to go; it tells you where you are. 36 $10 bills are scattered through the land. Can you find them all without bumping into the tax collector? Average playing time is a half-hour, but you will spend many more hours trying to find and keep all the money. A good game for the first time adventure player. Worth the price.-VIC-NIC News

MONSTER MAZE, $35 from Epyx. Maze game for VIC.

Mouse-eye view of a Pac Man maze (with optional overhead view at any time, except that you can't move while viewing.) Complete with power pellets and multiple levels, reached via stairs in each level. The simple graphic characters are not pleasant to look at over a long time, but are better and faster than earlier mouse-eye maze games. The sounds are mostly beeps, plus little tunes when you lose, eat a power pellet, etc. Time gets more important as you reach higher levels. Nice, but no thanks.-JS

PROTECTOR, $40 cartridge from HES. Rescue game for VIC. Requires joystick.

Fly a jet through underground caves, saving people atop underground buildings. Speed seems not to matter, but precision is quite important, as positioning errors cause a crash. On the other hand, the jet hovers indefinitely without effort (not terribly realistic). An enjoyable challenge, and far less stressful than time-related games like GRIDRUNNER. Color, sound and graphics are pleasant, but nowhere near the quality of CHOPLIFTER.-JS

RESCUE FROM NUFON, $10 from Nufekop. Graphic adventure game for VIC.

You are on a mission in an alien building to rescue fellow humans. You must locate them and beam them up to safety before the planet explodes. Four kinds of hostile aliens try to halt your efforts, but thanks to your trusty zip-gun you can disintegrate them. One room of the [5-story] building is shown at a time. Interesting, challenging and gives you a run for your money.-VIC-NIC News

RICOCHET, $20 cassette from Epyx. For VIC+8K. 30 day media warranty.

Tactical game similar to billiards. You protect a set of bowling pins from an opponent's ball, and launch your ball at its pins. The opponent may be a human, or any of several computer "personalities." A key feature is automatic handicapping, that allows a beginner to compete "fairly" with an expert. Uses simple but pleasant sounds and graphics. This one could consume a lot of time. (You'll spend the first 5 minutes just waiting for the data to load.) A good strategy game for teens and adults.-JS

SHOOTOUT AT THE OK GALAXY, $20 cassette from Avalon Hill. For VIC+8K.

You patrol a multi-sector area, looking for enemy ships to zap, by moving to the proper sector, centering the target, and shooting, while watching energy levels in ship and shields. Naturally the nasties shoot back. Compared to STARTREK, I found this a thoroughly frustrating game. Once you have a baddie in the sector, its motion is so random and rapid that hitting it is more luck than skill. Losing sight of it for even a moment means wandering around the sector seeking it again, getting hit all the time, without knowing the direction from which hits are coming. It has color, graphics and sound, but none you'll want to emulate in your own programs. Not recommended.-JS

SUPER PARATROOPER, $25 from Protecto Enterprises. Shoot-em-up game for VIC.

Your cannon shoots at helicopters, which in turn drop paratroopers that zap you if they reach the ground. Your shells can be guided even after launch. The colors are pleasant, the graphics good, and the sounds fairly realistic, if not enjoyable to bystanders. However the strategy isn't very involved. It also teaches you to kill humans. Ammunition it conserves, however, by punishing you with lost points when you lean on the trigger. I would tire of it quickly.-JS

WORD QUEST GAME, $12 from Soft-Sell

This is a word-search game. The object is to form as many words as possible from a 4X4 grid generated at random by VIC. Any number of people can play. VIC will keep time and score.-The VIC-NIC News

VIC 20 Ham Radio Reviews

SUPER LOG I Update, $15 cassette from Ham Data, Inc. For unexpanded VIC. Protected . 30 day warranty. (One of four versions.)

A complete log form for logging amateur radio contacts, with a good menu. It is a very good sequential data file program that offers several advantages of Data Base Management Systems (DBMS), with such features as Auto-date, auto-time, auto memory-adjust, and search. Easy to use in saving and loading. The manual is very complete and easy to understand. I have had hours of fun keeping my records of contacts just the way I like them. Super Log II and III require more memory, but do add a "Worked all States", and a "Worked all Countries."

There has been some feedback about INPUT individual times when first transferring entries from paper logbooks. "Captain" Chip Lohman (NN4U or 202/694-2881/3401) sent me some changes. He really does explain the programs very well, and is a great "guy." To choose the exact time of each entry for reconstruction of previous logs, make this temporary change: For the Super Log I, just load it, "list" the line indicated, and correct it to '#XX INPUT "time"; TI$' line no. 14.-Fred Jones (WA4SWF)

VIC 20 Hardware Reviews

"NEW" VERSION OF THE VIC 20

A NEWER "new" version VIC-20 [was] introduced without the usual horns, fanfare or confetti. The obvious change is [using] the [64] power supply, which supplies 9 volts AC and +5 volts regulated, outboard, through a DIN plug. The new VIC regulator is located outside the keyboard case [and] 2114 RAM chips (space heaters) [have been] replaced with sedate CMOS 6116 RAM chips. This important change resulted in an extremely cool running machine and a much smaller printed Circuit Board (PCB), [on] a larger piece of sheet-metal soldered beneath the smaller new verion PCB, [that] replaces an expensive coppper foil RFI shield. The big anodized aluminum heat sink was shucked for a small sheet-metal cartridge guide formed around the memory expansion edge connector. All this equates to a major layout and production change which cuts Commodore's costs on the VIC 20 even further!-Hank Mroczkowski (Hardcopy)

Expansion Memory:

THREE SLOT MEMORY/CARTRIDGE EXPANDER, $20 from World Electronics. For VIC.

REVIEW #1: I was hesitant [to buy this] because they did not advertise a phone number, nor accept major credit cards, and had not responded to a Club letter about bulk purchase discounts. But the price was too good to pass up, constantly changing game and RAM cartridges was not good for my VIC, and I could not use my new 3K RAM expander with my 16K expander. I was very pleasantly surprised. Quality was better than expected, although all wiring and connectors appear to be aluminum. To my astonishment, it was fused (a small low amp fuse is mounted between the cartridges and computer to protect them from each other) and switched (a bank of 4 dip switches turn off or on any cartridges inserted on the board). An excellent value for the price and quality.-(WCUC News)

REVIEW #2: It works well, but I have not tried connecting the reset switch yet (no instructions included).-Jerry Carter (CCC of Toledo News Letter)

VICSWITCH Update

You can it foul up by turning one of the linked computers off or on when the system is working. The reset signal on power-up is the cause. Apart from that, it still works fine.-JO

Interfaces:

GX1ØØ INTERFACE, $3Ø VIC parallel driver cartridge, from Tymac. Comes free with BANANA printer (and cable).

Gives entire Commodore graphic set to the BANANA printer. You have the capability of printing the character set or translation. Recommend use with disk drive. There seems to be an interference problem when cassette drive is plugged in, causing a DEVICE NOT PRESENT error. The graphic characters produced are far more readable than those on the 1525.-Bill McDannell

Other Equipment:

PROM QUEEN, $199 cartridge from Gloucester Computer. Full 9Ø day warranty.

As the only EPROM burner for VIC on the market, this will do well, regardless of quality, as will the forthcoming 64 version. However, also includes most features of the best extended monitors, 4K of RAM that can be used in other programs, a way to connect the VIC to another computer through a $13 cable with shared memory, and a loader routine to allow BASIC programs to be SAVEd to and RUN from EPROMs at any address, including the auto-start position at $AØØØ. It makes good use of function keys, color and sound for proper use.

The manual is a fairly deep tutorial and very complete, with a front index, and useful summaries at the back. I wish the commands were more like those in other extended monitors. However, in the hands of a skilled user, it is quite flexible and usable. (Its designer gave me a full and very impressive demo.)

Since JK is in urgent need of an EPROM burner, I've sent the PQ to him for further testing. Meanwhile, if you have only a VIC, and need to burn EPROMs, what are you waiting for? Get it. The 64 version is imminent, has even more features, and should also burn 2532's (one commmonly-used EPROM not accepted by the VIC version), as well as 2764 and larger EPROMs, without change.-JS

See under Hardware Reviews.
DISK DRIVES: **SUPER DRIVE**, $425 from MSD.
PRINTERS: **CANON AP4ØØ PRINTER/TYPEWRITER**, $1,2ØØ from A. B. Dick.
MODEL 5812 PRINTER STAND, $165 from Royal Seating Corp.

See under Commodore 64 Hardware Reviews.
DISK DRIVES: **STRINGY FLOPPY**, $199 from Exatron. Cartridge tape storage
MEMORY EXPANSION: **SOFT-AWARE BOX** mother board, $184 from Soft-Aware.
INTERFACES: **THE CONNECTION**, $119 by Tymac. Parallel printer interf.
INTERPOD, Version 1.4, $15Ø from Oxford Computer Systems.
PRINTERS: **COMMODORE 1526 PRINTER**, $395 from Commodore.
MONITORS: **BMC MONITOR**, around $9Ø.
COMMODORE 17Ø1 MONITOR Update, from Commodore.
LE MONITOR, $125 from PI Tech Ltd. 12" amber monitor.
NUMERIC KEYPADS: **FLEXIKEY**, from Gosub International..
NUMERIC KEYPAD, $25 from Cyberia.

VIC 20 Magazine Reviews

JOURNAL/20 Update, from Mike Apsey; bi-weekly, $12/year. For VIC.

Unlike many new publishers, Mike has continued to put out a quality product on a regular basis. Recently he switched to a newsprint to keep printing costs within reason, and I note that the current 2-sheet issue is just under one ounce, so he can still send it via first-class mail. Given that it was either go to newsprint or quit, Mike made the right decision. Still recommended.-JS

VIC 20 Modem Reviews

NEWSNET, information utility. No membership fee. $15 minimum/month (hourly fee varies from $18 to $100+). 1 free hour when join.

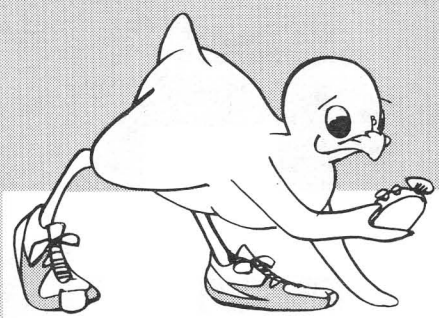
See under Modem Reviews.

VIC 20 Utility Reviews

See under Commodore 64 Utility Reviews.

SCREEN GRAPHICS, cassette from Abacus Software.

RABBIT, $40 from EHS.



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Feature Article:
LANGUAGE (FORTH)

Introduction to FORTH: Part I

by Mark Niggemann

FORTH is a very compact, but powerful language that easily adapts to microcomputers. The main reason FORTH has become so popular is that it's a very fast High Level Language (HLL) that controls the CPU very much like assembly language, making it ideal for real time processing. It's also an extensible language. In fact, this is how FORTH programs are created. Every FORTH application is constructed out of several pre-defined and user defined words (building blocks) that is represented by a single FORTH word when finished! This structured programming technique is called Bottom-Up programming. Since FORTH is a structured language, it doesn't have a pre-defined GOTO word, for example.

HOW TO USE REVERSE POLISH NOTATION (RPN):

FORTH is a very efficient programming language. In order to achieve that efficiency, sacrifices were made. First, FORTH does not contain any floating point operations, doing all arithmetic with integers. Second, FORTH performs all operations and evaluations using Reverse Polish Notation (RPN), so that all operands (Numbers, expressions, character strings, etc.) appear before the operation to be performed. Here is an example of an RPN expression.

```
        4 5 +                          gives the answer 9.

The following expression:              would look like this in RPN:

     (8 + 9) * 6 / (5 + 2)             8 9 + 6 * 5 2 + /
```

The RPN expression takes fewer keystrokes than the standard expression, because RPN doesn't require parentheses to separate groups of numbers. People with Hewlett-Packard calculators already use this type of notation.

HOW THE STACK WORKS IN FORTH:

Another reason FORTH uses RPN is that the operands can be placed on a stack, popped off as required, and then executed. Almost all FORTH words work like this. Here is an example in FORTH of how this stack transfer occurs.

```
        65 EMIT [Return] A OK
```

This line puts the number 65 on the stack and then executes the FORTH word EMIT. EMIT prints the character value of the top item on the stack. The ASCII value of the letter 'A' is 65 in decimal. 'OK' is a standard response in direct mode to indicate that no errors were encountered.

The next example uses the stack to evaluate a numeric RPN expression:

```
        5 4 + 6 * [Return] OK
```

Notice that the result was not printed - because it's still on the stack! To get it off the stack and printed on the screen, just add the word '.':

```
. [Return] 54 OK
```

Arithmetic expressions in FORTH always leave their results on the stack, so that other FORTH words may operate on the result of that computation. This can be very handy at times, but it does take some getting used to.

DEFINING YOUR OWN FORTH WORDS:

It's easy to define your own FORTH words in direct mode. Earlier, I used the FORTH word EMIT to print out a character when given its ASCII code value. Since the word EMIT is not too descriptive, let's redefine it as PRINT.

```
: PRINT EMIT ; [Return] OK
```

Now whenever we precede the word PRINT by an ASCII code, it will be printed on the screen. This is called a Colon Definition, because the definition of new FORTH word starts with a colon and ends with a semicolon. Now let's do something more elaborate, like print out X number of the character Y. Try this:

```
: XYPRINT SWAP 1 DO DUP PRINT LOOP PRINT ; [Return] OK
```

Now if we want to print something, like 20 A's, here is how we execute it:

```
20 65 XYPRINT [Return] AAAAAAAAAAAAAAAAAAAA OK
```

First the code exchanged the top two stack items and pushed a 1 on top of the stack. The DO is part of a loop, similar to FOR-NEXT in BASIC. The loop will begin counting from the value 1 on the top of the stack and end at 20, the next value on the stack. (That is why we did a SWAP in the first place. Otherwise, 65 would be at the end and character 20 would be printed.) DUP copies the value 65 on the top of the stack and places it just below the top item. Since PRINT was defined earlier to be EMIT, the value 65 is popped off the stack and printed as the character 'A'. LOOP terminates the loop. We exit the loop after the 20th turn and hit another PRINT (to clean up the last item on the stack, caused by the previous DUP). And there you have it; your very first FORTH program!

WHERE TO LOOK FOR MORE INFORMATION:

Articles:

Starting FORTH, by Leo Brodie
"What FORTH is ?," by H.T. Gordon, Dr. Dobb's Journal, Jan81, pp8-15
"What is FORTH?," by John James,Byte, Aug80, pp100-126
"FORTH Extensibility or How to Write a Compiler in 25 Words or Less," by Kim Harris, Byte, Aug80, pp164-184
"FORTH Philosophy," by Harris, Kim, Dr. Dobb's Journal, Sep81, pp6-11
"FORTH Alternative," by Timin, Mitchell, Dr. Dobb's Journal, Sep81, pp57-59

Companies Providing FORTH:

64:	Performance Micro Products, C64-FORTH, $100
	AB Computers, FORTH for C64, $50
	Human Engineered Software, 64 Forth Cartridge, $60
VIC:	Human Engineered Software, VIC FORTH on cartridge, $60
PET/CBM:	AB Computers, FORTH, $50
	FSS Software, FSS-FORTH, $75
	ATUG, FIG-FORTH (public domain), $10

Feature Article:
MONITOR

PET Monitor Meanderings

by John Easton
adapted by Ellen Strasma

Recently David Williams took the Toronto PET User's Group on a tour of the Machine Language Monitor. In this overview of those sessions are some rather simple little exercises if you are already familiar with the functions of the Monitor, but give the novice a painless introduction to this mysterious world.

TO TAKE YOUR FIRST PEEK:

To take a simple look at the M/L Monitor (Dave didn't once mention those terrifying words Machine Language), we first carefully cleared all memory [by typing NEW]. Then, typing a simple SYS 1024 got us into this mysterious world of IRQ's, Registers, and Stack Pointers. But David said not to worry, - just poke around in memory to look at what might be there. We first looked at the start of BASIC by entering 'M 0400 0440' [RETURN]. (But don't use the shift key.)

Why did we type that? The "M" was a request for "Memory" from location 0400 hex (that is, a number in base eight). Since the start of BASIC RAM is stored at memory location 1024 in decimal (base ten notation), that decimal number 1024 in hex notation equals 0*4096 + 4*256 + 0*16 + 0*1, or 0400.

Naturally, there wasn't much there. Since we hadn't yet entered anything into computer memory, that's also where the end of BASIC was noted. Quick as a wink, the screen filled with 00 00 00 and a whole bunch of AA's - 45 of them, complete with an associated address for every eighth number - thoughtfully placed there for those of us who can't count. Like I said, magic.

Why the 3 sets of zero's? That's BASIC's way of marking the END OF BASIC. Why the AA's? That's a good question! AA in binary (a number in base two) is 10101010. By filling memory with this pattern, memory tests are a snap.

EVERYONE KNOWS WHAT BASIC LOOKS LIKE, RIGHT?:

Let's put something into memory with a short one-line program. First we must leave the MONITOR mode by entering our next M/L magic word,'X', following the '.' that the computer prints on the screen for you. Now we're back in BASIC mode. Let's try something simple like '10 A=15'. Can't get much simpler than that, can we? Type that BASIC line in your computer. Now, let's take a quick jump to the MONITOR. Ask to see memory locations 0400 to 0410 by typing 'm 0400 0410'. Now we're looking at a real live line of BASIC Code in funny numbers!!

```
.M 0400 0410
   0400   00 0A 04 0A 00 41 B2 31
   0408   35 00 00 00 AA AA AA AA
   0410   AA AA AA AA AA AA AA AA     etc.
```

Let's examine this a little closer. Remember that each pair of numbers on a line stands for one of eight locations (in hex notation) following the location listed by the 4-digit number listed to the left. That means the first line shows:

```
0400  00:  Normally 0 value at this location
0401  0A
0402  04:  These two locations point to the start of the NEXT LINE
           of BASIC and are written in REVERSE Notation, Lo/Hi value
           (translate to decimal as $040A or 1034)
0403  0A
0404  00:  These two locations take care of the line number 10
           (reverse order value again)
0405  41:  This location indicates our first variable name, "A" --- 41
```

David told us that a clue to notation of Alpha Characters is indicated by the preface 4 _, starting at 4 1 for A and progressing upwards into 5 something. Perhaps 4 really stands for a decimal value of 64. By adding a 1 in the "units" column, one could conclude that the value of hex 41 is decimal 65 - which just happens to be the ASCII value of the letter A! And I thought it was magic.

```
0406  B2:  Now there's a funny one, but every time I type an = sign,
           that's what comes out.  There must be tables of these
           values stored somewhere in the machine.
0407  31
0408  35:  What do we have left from our BASIC line?  The number 15!
```

Using David's quick clues to NUMERIC notation, a plain number is always prefaced by a 3 (that rule doesn't include things like floating point numbers, etc.). Since hex 31 translates to decimal 49, which is ASCII for the number 1, it's plain as day that those two figures represent our number 15 from BASIC.

```
0409  00
040A  00
040B  00:  We've found our END OF BASIC flag.  Should we care to add
           another line to our BASIC code, it would begin at 040A (as
           the notations at 0401 and 0402 have already told us), leav-
           ing a single 00 marking the END OF the first LINE at 0409.
```

WHAT DOES SCREEN MEMORY LOOK LIKE?:

Got it so far? Didn't hurt a bit, did it? Now that we're so facile in accessing the MONITOR, let's peek at the start of SCREEN MEMORY, which starts at hex 8000. Access these Memory locations with 'M 8000 8XXX' (XXX being anything else up to FFF - which would give you all 4096 locations - a wee bit too much for any one screen at a time). You only want to see the first 1000 locations for 40-column machines, or 2000 for 80 column machines. What about the rest? I do recall something about a duplicate image. Why not look around yourself and see? Let's just access a workable chunk by setting our upper limit at 040. Unless your screen is absolutely clear at the top, you're about to see lots of numbers that correspond to whatever character or symbol is presently sitting in that position on your screen - starting in the upper left corner at hex 8000. Incidentally, blanks are represented, not by the 00's or AA's in our earlier exercise, but by a 20 (which is hex for an ASCII space character).

Now let's work backwards, by changing the MONITOR, and see what happens on the screen. Let's change the contents of location $8000. Put your cursor over the number (just like in BASIC), change it, and hit [RETURN]. You should immediately see something appear in the 'home' position of your screen. From the previous paragraphs, you might naturally believe that an A is designated by the value 41. Not so; here we run into another set of tables. Commodore machines have a special set of code to address the screen. Perhaps, you've seen it listed in tables as SCREEN POKE values. Because the two character limit on individual memory locations only has room for values up to 255 (hex FF), Commodore has scrunched the code tables so that they can include all their fancy graphics and reverse symbols within this FF limitation. Play around and see what happens (A, incidentally is 01, while reverse A is 81.

STRING VARIABLES

Now we're going to set a string variable, and see how the PET keeps track of it. Turn your machine off and on again. Then, let's type in some string information in immediate mode, so we don't have to bother tracking BASIC line numbers. We'll type: A$="A STRING"

Break to the monitor with a SYS 4 (usually, a safe short cut for SYS 1024) and check memory at Start of BASIC :

```
.M 0400 040F
   0400   00 00 00 41 80 08 F6 7F
   0408   00 00 AA AA AA AA AA AA
```

While you're in Monitor mode, also check the Top of BASIC, just under the Screen location of $8000.

```
.M 7FF0 7FFF
   7FF0   AA AA AA AA AA AA 41 20
   7FF8   53 54 52 49 4E 47 05 04
```

Well, what have we here? Let's break it down as David explains it.

```
0400 00
0401 00
0402 00 - Normal indication for End of BASIC Program, and since we
          haven't yet typed in a BASIC Program, it's right where we
          should expect it - at Start of BASIC.
0403 41 - Since variables start right after BASIC, here's where we
          find our first variable,'A$'.  You know this is hex for 65
          which is ASCII for A.
0404 80 - Now here's a new one!
```

Actually, as EVERYONE knows, BASIC reserves two characters for any string. This is the second character, and because we didn't have a second character, it is designated 00. BUT you say, there's an 80 in that spot. Right! To signify a string variable, hex 80 is added to the second character. If we had indicated the variable as AA$, this spot would have contained the value C1 ($41+$80).

```
0405 08 - This indicates STRING LENGTH - 8 characters (including a space).
0406 F6
0407 7F - These two locations point to the actual string in hi-memory,
          written in reverse order.  If we look at location 7FF6,
          we should find the start of this string.
0408 00
0409 00 - Extra spaces reserved in case this had been another kind
          of variable that uses more room.
```

Now that we know where this string is actually stored, let's look at the top of memory to see HOW it's stored.

```
7FF6 41 - looks like an A
7FF7 20 - obviously a space (hex for ASCII 32)
7FF8 53 - hex for ASCII 83 or S
7FF9 54 -     ditto     84 or T
7FFA 52 -     ditto     82 or R
7FFB 49 -     ditto     73 or I
7FFC 4E -     ditto     78 or N
7FFD 47 -     ditto     71 or G
7FFE 05
7FFF 04 - This is the BACK POINTER, that shows the location of the
          appropriate Variable in the Variable Table, which is 0405
          (reverse order again).  Actually, it doesn't spot the start
          location; it drops into the spot where this information is
          actually needed.  In this case, we go to the location that
          tells us to pick up 8 characters for the variable A$ - and
          we've just done that with our look at 7FF6 thru 7FFD.
```

WHAT HAPPENS IN GARBAGE COLLECTION?:

So, what about the infamous 'Garbage Collection' that can send old 2.Ø ROM sets (and VIC and 64) out to lunch for indefinite periods? Since they don't have this Back Pointer built in, they have no convenient way to tell the operating system what's new and what's old. How does BASIC 4 show this? Let's ask. Exit the Monitor with the 'X' command, and write another value into A$ (like A$="B STRING"). Drop back into the Monitor with the 'M' command, and take a peek.

```
.M Ø4ØØ Ø4ØF
   Ø4ØØ   ØØ ØØ ØØ 41 8Ø Ø8 EC 7F
   Ø4Ø8   ØØ ØØ AA AA AA AA AA AA

.M 7FE8 7FFF
   7FE8   AA AA AA AA 42 2Ø 53 54
   7FFØ   52 49 4E 47 Ø5 Ø4 41 2Ø
   7FF8   53 54 52 49 4E 47 Ø8 FF
```

The only change at the low end is the value of Ø4Ø6 which changes from F6 to EC. Ahah! We've found a new storage location in Hi-mem. Sure enough, the new string has been chunked up there starting at 7FEC, just as we thought. It looks the same as the previous one, except for the substitution of value 42 for 41 (B for A). But look at the old one; our Back Pointer now has values of Ø8 and FF. On a garbage collection, the machine just looks for the ABANDON STRING marker (FF), checks for the number of characters to abandon (Ø8), and zing, it's done! No more running back and forth checking addresses. Well, that's the theory.

SOME USEFUL POINTERS:

While still in Monitor Mode, why not take a look 'way down near the bottom of Zero Page from $ØØ28 on. You'll probably see something similar to this:

```
.M ØØ28 ØØ35
   ØØ28 Ø1 Ø4 Ø3 Ø4 ØA Ø4 ØA Ø4
   ØØ3Ø EC 7F EC 7F ØØ 8Ø Ø1 FF
```

These few locations are your normal Program POINTERS. Perhaps you're more familiar with the same information thru PEEK's to the same location. For instance, I've often checked for the End-of-BASIC with PEEK(42) AND PEEK(43). Well, now that you recognize Hex so easily, you can see that locations $ØØ2A and $ØØ2B are the same old familiar End-of-BASIC pointer, but let's check them out.

```
ØØ28 Ø1
ØØ29 Ø4 - Start of BASIC Text (note all these are in Lo/Hi order)
ØØ2B Ø4 - Start of Variables (or conversely, End of BASIC)
ØØ2C ØA - (copy as 2A and 2E also)
ØØ2D Ø4 - Start of Array Table (or conversely, End of Variables)
ØØ2F Ø4 - Pointer to end of Arrays (start of actual FREE memory)
ØØ3Ø EC
ØØ31 7F - Start of actual Strings. Note that actual free memory
          space is the space between the previous two locations.
ØØ32 EC
ØØ33 7F - Utility marker to top of Free String Space.
ØØ34 ØØ
ØØ35 8Ø - Top of Memory accessable to BASIC (Start of Screen Memory)
```

TELL IT AGAIN, SAM...:

Well, if I am told this stuff enough times, it slowly begins to make sense. If it was confusing to you at first reading, don't worry. Read it again, and when the dust settles, all this mysterious talk of Machine Language will begin to look a bit less formidable.

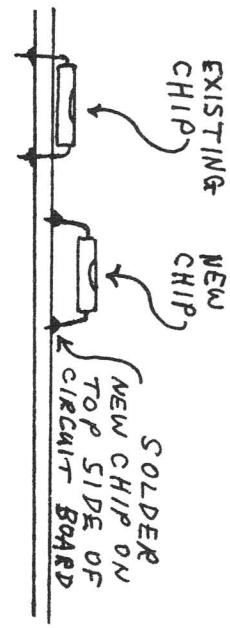
Expanding your VIC 8K Memory Expansion Board to 16K

by Peter J. Farrow

The Commodore 8K memory board can be upgraded to 16K for those that have a steady hand, a small soldering iron, and a desire for more memory. First, we need a standard Commodore 8K plug-in board. This already has the room for the four additional static memory chips to do the job. In addition, we need the following materials: four type 6116 chips (or equivalent, about $4 each), a small low-wattage soldering iron, "electronic" type solder, aluminum foil, and a magnifying glass. A well lighted, clean work area is a must. Since 6116 chips (and any other chips) can easily be damaged by static discharges, humidity also helps. DO NOT remove the 6116 chips from the foam or foil until ready to install them; it protects the chips from static electricity.

PREPARING THE EXPANSION CARTRIDGE:

First, remove the Commodore memory board from the cartridge. Follow the instructions for changing the "Block Select" switch that came with the cartridge. Carefully inspect it for current chip placement. The four large chips are the 6116's. Each chip has a small reference "indent" on the top edge. The pin to the left of this indent is pin 1, and a small figure 1 should be visible on the printed circuit below. Wrap the end of the board that has chips already installed with aluminum foil, leaving the chip nearest the center uncovered. Press the foil over the pins of the chips on the solder side so that they are all connected together, to cut the chances of damage from "static."



Bend the pins of one of the new chips towards each other to form two rows 9/16 inch apart. Holding the board in one hand, take the 6116 in the other and place it on the component side of the board. Make sure that the "indent" is facing the same way as the chips already on the board before soldering the chip in position. Install chips U6, U7, and U8 facing the same way as U2, U3 and U4. U9 faces the same way as U1. Use a minimum of solder and heat. DO NOT try to push the pins of the new chip through the board. That could end up pulling the fragile "traces" from the board.

TESTING THE INSTALLATION:

After installing the four new chips, carefully inspect them for shorts or excess solder with the magnifying glass. If all looks good, remove the aluminum foil and install the board in the VIC for testing. When the VIC is turned on, it should have 19967 BYTES FREE. If not, immediately switch the VIC off and remove the memory for re-inspection. An excess of solder between pins is disaster! Do not use a meter or other checker to look for shorts.

ADDING A DIP SWITCH:

If everything looks good, there is one further change that one can make. As the board comes, the new memory will automatically be in Block 2. If you need another Block selection, follow the printed trace on pin 11. This is similar to those on pins 10 and 12, except that instead of ending in a small "half moon" pad, it has a small jumper that goes to U5. Carefully cut this jumper and a mount a small "Dip Switch" (about $1.50 from Radio Shack) on the printed circuit with its leads penetrating the board.-Reprinted from CHUG Hardcopy

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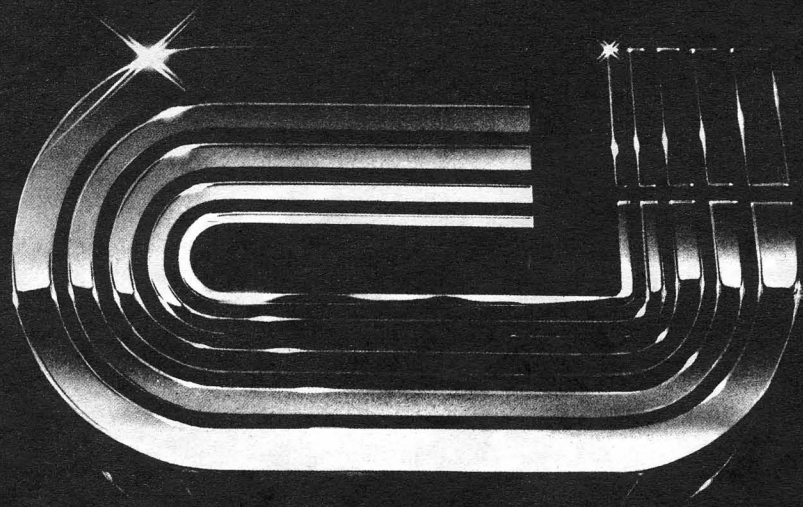

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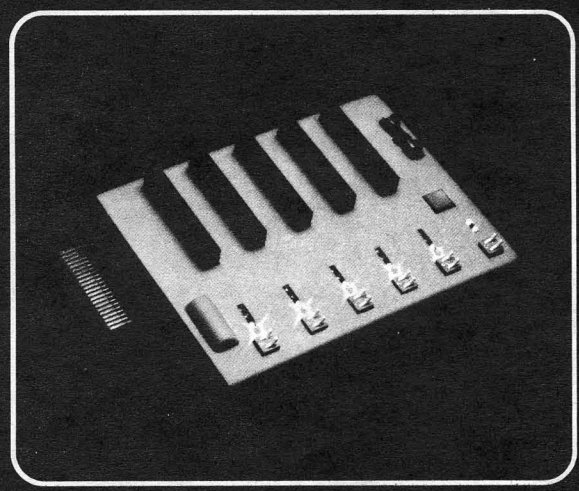

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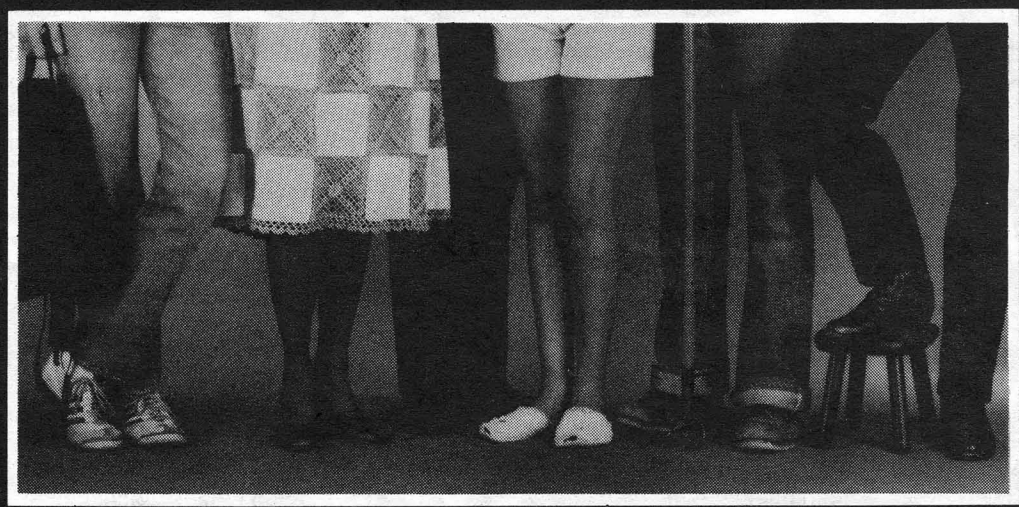

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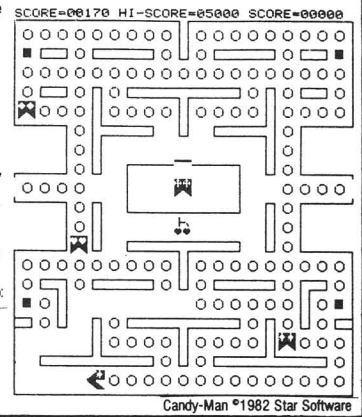

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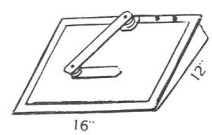

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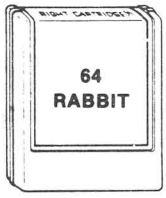

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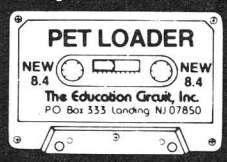

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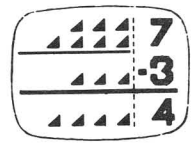

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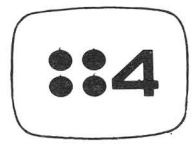

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